

# **IMPORT FAST FREQUENCY RESPONSE AGREEMENT**

Between

**INDEPENDENT SYSTEM OPERATOR (operating  
as Alberta Electric System Operator)**

and

**[Insert NAME]**

**[Insert Date]**

---



TABLE OF CONTENTS

1. Definitions..... 2

2. Interpretation..... 11

3. Services..... 12

4. Commencement and Conditions Precedent ..... 14

5. Compliance with Applicable Laws..... 15

6. Representations and Warranties..... 15

7. Compensation..... 16

8. Audit and Records..... 18

9. Confidentiality..... 18

10. Indemnity..... 21

11. Damages..... 22

12. Change in Law..... 23

13. Injunctive Relief..... 23

14. Notice..... 23

15. Dispute Resolution..... 24

16. Termination..... 25

17. General..... 26

SCHEDULE "A" – FFR FACILITY INFORMATION..... 30

SCHEDULE "B" – FFR ELIGIBILITY AND REQUIREMENTS ..... 32

## IMPORT FAST FREQUENCY RESPONSE AGREEMENT

THIS AGREEMENT is made effective as of the [XX] day of [XX], 2021

BETWEEN:

INDEPENDENT SYSTEM OPERATOR, operating as AESO, a statutory corporation established pursuant to the *Electric Utilities Act (Alberta)* (the "AESO")

- and -

**[AESO NTD: please choose one and delete the one that does not apply]**

[LONGNAME],

a corporation, incorporated pursuant to the laws of the Province of [insert name of province] (the "Service Provider")

[LONGNAME],

a [partnership / limited partnership] formed in accordance with the laws of the Province of [insert name province] (the "Service Provider")

**WHEREAS** the AESO's statutory mandate includes responsibility for the safe, reliable and economic planning and operation of the System;

**AND WHEREAS** the AESO requires the Services in order to test the ability of New Technology to provide the Services which are critical to the reliability of the System;

**AND WHEREAS** the Service Provider is prepared to provide Services to the AESO in accordance with this Agreement;

**NOW, THEREFORE**, in consideration of the terms and conditions contained in this Agreement and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. **Definitions.**

1.1 In this Agreement, the following capitalized terms shall have the meanings set out below, unless the context clearly indicates otherwise:

"**Actual Response Volume**" means the amount of real power in MW (recorded to one (1) decimal point) from the FFR Facility that is Armed and Responds in accordance with the FFR Requirements.

"**Actual Volume**" means the total amount of real power in MW (recorded to one (1) decimal point) that is able to provide a Response from the FFR Facility at any point in time, which is calculated as the following:

- (a) if the FFR Facility Source Asset is solely comprised of energy storage, (i) when consuming real power, it is the State of Charge in MWh divided by one (1) hour, plus the absolute value of the real power in MW; or (ii) when at zero real power, it is the State of Charge in MWh divided by one (1) hour; or (iii) when producing real power, it is the lesser of: (A) the Available Capability in MW minus the real power in MW; and (B) the State of Charge in MWh divided by one (1) hour; or

- (b) if the FFR Facility Source Asset includes a Generating Unit of a type other than Energy Storage, it is the Available Capability in MW minus the real power in MW, with a maximum value as the Contract Volume, unless the State of Charge in MWh is zero and then the "Actual Volume" will be zero;

and such amount shall be reduced by the total amount of real power in MW committed by the FFR Facility to any other market for ancillary services or otherwise adjusted in the manner specified by the AESO to reflect the total amount of real power that is able to provide a Response from the FFR Facility.

"**AESO**" means the Independent System Operator, operating as the Alberta Electric System Operator, established under the EUA, being the Party described in the opening paragraph of this Agreement, and includes its successors and assigns.

"**AESO Representative**" means the representative of the AESO responsible for managing all matters related to this Agreement on behalf of the AESO, as specified in Section 14.

"**Affiliate**" means "affiliate" as such term is defined in the ISO Glossary.

"**Agreement**" means this Import Fast Frequency Response Agreement and all attached Schedules, Exhibits, and any amendments thereto.

"**Alberta Reliability Standards**" means "reliability standards" as such term is defined in the ISO Glossary.

"**Applicable Laws**" means:

- (c) any applicable principles of common law and equity and any applicable federal, provincial, municipal and local law including any statute, subordinate legislation, or treaty; and
- (d) any applicable guideline, protocol, directive, direction, rule, standard, requirement, program, policy, order, judgment, injunction, award, or decree of a Governmental Entity having the force of law, including but not limited to the ISO Rules and the Alberta Reliability Standards.

"**Arm**", "**Armed**", and "**Arming**" means enabling the functionality of the FFR such that the under frequency relay or control system operates when the target frequency of fifty nine point five (59.5) Hz is reached or a SCADA Response Signal is received.

"**Armed Volume**" means the amount in MW (recorded to one (1) decimal point) Armed for FFR by the Service Provider following a Dispatch.

"**Arming Payment**" means the sum of all Hourly Arming Payments for the applicable Month.

"**Arming Price**" means \$[XX.XX]/MW.

"**Arming Volume**" for each Hourly Dispatch Period means one of the following, as applicable:

- (a) 0 MW, when the Actual Volume for such Hourly Dispatch Period is below the Lower Tolerance Limit of the Dispatched Volume at any point in time during the Hourly Dispatch Period; or
- (b) the Armed Volume, when the Actual Volume for such Hourly Dispatch Period is equal to or above the Lower Tolerance Limit of the Dispatched Volume at all points in time during the Hourly Dispatch Period.

**"Available Capability"** means "available capability" as such term is defined in the ISO Glossary.

**"Availability Payment"** means the sum of all Hourly Availability Payments for the applicable Month.

**"Availability Price"** means \$6.00/MW.

**"Availability Volume"** for each hour means the Offered Volume.

**"Business Day"** means "business day" as such term is defined in the ISO Glossary.

**"Capability Test"** has the meaning ascribed to it in Section 6.1 of the FFR Requirements.

**"Certified Report"** has the meaning ascribed to it in Section 6.2 of the FFR Requirements.

**"Change in Law"** means the adoption, enactment, promulgation, modification, amendment, or revocation, after the Proposal Date, of:

- (a) any Applicable Laws specifically governing the provision of the Services hereunder; or
- (b) any interpretation, reinterpretation, or administrative position relating to any such Applicable Laws by any Governmental Entity,

provided that "Change in Law" shall not include any adoption, enactment, promulgation, modification, amendment, or revocation after the Proposal Date that the Service Provider knew about or reasonably ought to have known about before the Proposal Date. For the avoidance of doubt, a "Change in Law" shall not include any adoption, enactment, promulgation, modification, amendment, or revocation that would apply to the Service Provider if they were not providing the Services hereunder.

**"Commercially Reasonable Efforts"** when used in connection with an obligation of a Party under this Agreement, means taking, in good faith and with due diligence and in accordance with prudent industry practices, reasonable commercial steps to achieve the objective and to fulfill the obligation at the earliest reasonable time, including doing all that a reasonable and prudent owner or operator, as the case may be, in comparable circumstances would do and expending funds and assuming liabilities which are reasonable in nature and amount in the context of the obligation being performed, in each case, having regard to the importance of the obligation to the successful performance of this Agreement.

**"Communication Confirmation"** has the meaning ascribed to it in Section 6.2 of the FFR Requirements.

**"Conditions Precedent"** has the meaning ascribed to it in Section 4.2.

**"Confidential Information"** has the meaning ascribed to it in Section 9.1.

**"Confirmation Notice"** has the meaning ascribed to it in Section 4.2.

**"Confirmation of Indemnity"** has the meaning ascribed to it in Section 16.5.

**"Contract Volume"** means an amount of capacity in MW equal to [XX] that the Service Provider has agreed to provide for FFR in accordance with this Agreement.

**"Credit Rating"** means, in respect of any Person at any time:

- (a) the rating assigned to the Person's unsecured, senior long-term debt obligations; or
- (b) if the Person does not have an unsecured, senior long-term debt rating, the rating then assigned to it as an issuer rating by Standard & Poor's or an equivalent rating by a major reputable corporate rating service satisfactory to the AESO.

"**Directive**" means "directive" as such term is defined in the ISO Glossary.

"**Disclosing Party**" has the meaning ascribed to it in Section 9.1.

"**Disarm**", "**Disarmed**", and "**Disarming**" means disabling the functionality of the FFR such that the under frequency relay or control system does not operate when the target frequency of fifty nine point five (59.5) Hz is reached or a SCADA Response Signal is received.

"**Dispatch**" means "dispatch" as such term is defined in the ISO Glossary.

"**Dispatched Volume**" means the amount in MW (recorded to one (1) decimal point) to be Armed for FFR, as Dispatched by the System Controller.

"**Effective Date**" means [XX].

"**Eligibility Requirements**" means the requirements in Section 1 of Schedule "B".

"**EMS**" has the meaning ascribed to it in Section 2.1 of the FFR Requirements.

"**Energy Storage**" means any technology or process that is capable of using electricity as an input, storing the energy for a period of time and then discharging electricity as an output.

"**Exhibit**" means any exhibit, attachment, or appendix attached to and incorporated by reference into any Schedule.

"**Expiry Date**" means the day immediately before the date which is the one (1) year anniversary of the Service Start Date.

"**EUA**" means the *Electric Utilities Act* (Alberta).

"**Failure to Supply**" means the occurrence of any of the following in any one (1) hour period:

- (a) the Service Provider fails to respond to a Dispatch in accordance with the FFR Requirements;
- (b) the Service Provider fails to Arm the FFR Facility in accordance with the FFR Requirements or Arms the FFR Facility contrary to the FFR Requirements; or
- (c) the Service Provider fails to provide a Response from the FFR Facility in accordance with the FFR Requirements.

Multiple occurrences of a Failure to Supply in one (1) hour shall be deemed to be a single occurrence.

"**FFR**" means fast frequency response service which meets the requirements described in Schedule "B".

"**FFR Facility**" means the facility and the equipment associated with the Services that is located at the facility as described in Schedule "A".

"**FFR Requirements**" means the FFR Eligibility and Requirements attached hereto as

Schedule "B", as amended, supplemented, replaced or otherwise modified from time to time.

**"Financial Obligation"** means "financial obligation" as such term is defined in the ISO Glossary.

**"Financial Security"** means "financial security" as such term is defined in the ISO Glossary.

**"FOIP Act"** means the *Freedom of Information and Protection of Privacy Act* (Alberta).

**"Force Majeure"** means any occurrence (and the effects thereof):

- (a) which is beyond the reasonable control of the Party claiming relief of its obligations under this Agreement and which could not have been avoided through the use of Good Electric Industry Practice and which prevents such Party from satisfying its obligations under this Agreement including, but not limited to: acts of God or the public enemy, flood, earthquake, storm, cyclone, tornado, hurricane, lightning, fire, explosion, epidemic, war, embargoes, riot or civil disturbances, sabotage, expropriation, confiscation or requisitioning of facility, change in federal or provincial policy or legislation affecting the AESO's conduct; and
- (b) which the Service Provider or the AESO (as the case may be) could not have reasonably foreseen or taken reasonable measures to prevent, but which shall not include any lack of finances, any occurrence which can be overcome by incurring reasonable additional expenses, any Forced Outage, any strike, lock-out or any other form of labour dispute, or any other form of delay caused by contractual or labour relations between the Service Provider and any of its Personnel.

**"Forced Outage"** means any Outage which:

- (a) is not anticipated through regular maintenance;
- (b) is caused by defective equipment, a System Disturbance, or any human element; and
- (c) occurs as a result of any automatic action or operation, or as a result of any manual action or operation (deliberate or accidental), the purpose of which automatic or manual action or operation is to avoid risk of injury to personnel or the public, or damage to equipment or property.

**"Good Electric Industry Practice"** means the standard of practice attained by exercising that degree of knowledge, skill, diligence, prudence and foresight which would reasonably and ordinarily be expected from a skilled and experienced Person engaged in the same type of undertaking in the same or similar circumstances, including determining what is reasonable in the circumstances having regard for safety, reliability and economic considerations but is not intended to be limited to the optimum practice, method or act, to the exclusion of all others, and rather is intended to include practices, methods and acts generally accepted in Alberta.

**"Governmental Entity"** means:

- (a) any multinational, federal, provincial, municipal, local or other governmental or public department, central bank, court, commission, board, bureau, agency or instrumentality, domestic or foreign;
- (b) any subdivision or authority of any of the foregoing; or
- (c) any quasi-governmental or private body exercising any legislative, judicial, regulatory, administrative, expropriation or taxing authority under or for account of any of the above.

"**GST**" means the goods and services tax provided for in Part IX of the *Excise Tax Act* (Canada).

"**Guarantee**" means a written, irrevocable guarantee of a Person ("**Guarantor**") that guarantees the performance of the obligations and covenants of the Service Provider in this Agreement, such guarantee in form and substance satisfactory to the AESO.

"**Guarantor**" has the meaning ascribed to it in the definition of "Guarantee".

"**Hourly Arming Duration**" means the number of minutes (in whole minutes) in the Hourly Dispatch Period that the capacity was Armed where:

- (a) the beginning of the Hourly Arming Duration is established by the acceptance of a Dispatch by the Service Provider; and
- (b) the end of the Hourly Arming Duration is established by either: (i) the timestamp of the Disarm signal or when the System Controller issues a new Dispatch; or (ii) when the FFR Facility provides a Response.

"**Hourly Arming Payments**" for any given hour, means the sum of all Hourly Dispatch Period Arming Payments in such hour.

"**Hourly Availability Payments**" for any given hour, means:

[Availability Volume X Availability Price]

"**Hourly Dispatch Period Arming Payment**" means for each Hourly Dispatch Period:

[Arming Volume X Arming Price X Hourly Arming Duration] / 60

"**Hourly Dispatch Period**" means within a given hour, a period of time no greater than sixty (60) minutes during which there is Armed Volume. For greater certainty, for any given hour, there may be multiple Hourly Dispatch Periods.

"**Hourly Response Payments**" means:

[Response Volume x Response Price]

"**Hz**" means hertz

"**Insolvent**" means the Service Provider:

- (a) becomes insolvent or is unable to meet its debts as they become due;
- (b) files a voluntary petition in bankruptcy or seeks reorganization or to effect a plan or other arrangements with creditors;
- (c) files an answer or other pleading admitting, or fails to deny or contest, the material allegations of an involuntary petition filed against it pursuant to any applicable statute relating to bankruptcy, arrangement, or reorganization;
- (d) shall be adjudicated as bankrupt or shall make an assignment for the benefit of its creditors generally; or
- (e) shall apply for, consent to, or acquiesce in the appointment of any receiver or trustee for all or a substantial part of its property, and any such receiver or trustee shall be



appointed and shall not be discharged within thirty (30) days' after the date of such appointment.

"**ISO Glossary**" means the ISO Consolidated Authoritative Document Glossary, as amended from time to time.

"**ISO Rules**" means "ISO rules" as such term is defined in the EUA.

"**Liquidated Damages**" has the meaning ascribed to it in Section 11.2.

"**Long Stop Date**" means March 15, 2022.

"**Lower Tolerance Limit**" means an amount in MW (rounded to one (1) decimal point) equal to ninety five percent (95%) of the Dispatched Volume.

"**LPR**" means the *Liability Protection Regulation* (Alberta).

"**Market Participant**" means an "electricity market participant" as such term is defined in the EUA.

"**Material Adverse Change**" means:

- (a) a downgrade in any Credit Rating, if applicable, of the Service Provider or any Guarantor by any credit rating agency; or
- (b) any event, circumstance or change which results, or would reasonably be expected to result, in a material adverse change in: (i) the financial condition of the Service Provider or any Guarantor; (ii) the ability of the Service Provider to perform its obligations under this Agreement; or (iii) the assets or business of the Service Provider or any Guarantor.

"**Month**" means "month" as defined in the ISO Glossary.

"**Monthly Payment**" has the meaning ascribed to it in Section 7.1.

"**MSA**" means the Market Surveillance Administrator, established under the *Alberta Utilities Commission Act*, and includes its successors and assigns.

"**MW**" or "**Megawatt**" means 1,000,000 watts or 1,000 kilowatts of real power.

"**MWh**" means Megawatt hour.

"**New Technology**" means a technology, such as Energy Storage, that forms all or a portion of a generating Source Asset and that is capable of complying with the FFR Requirements, including the 0.2 second under frequency detection and response time.

"**Offered Volume**" means, in any given hour, the amount in MW (recorded to one (1) decimal point) last received by the AESO: (i) on or prior to twenty-three minutes before the hour (XX:37) for those amounts received prior to January 1, 2022; and (ii) on or prior to twenty-five minutes before the hour (XX:35) for those amounts received on or after January 1, 2022; provided, any such amount shall not exceed the Contract Volume.

"**Outage**" means any removal from service, outage, derate, capacity reduction, or other event during which the FFR Facility (or any portion thereof) is not able to provide all or a portion of the FFR pursuant to this Agreement.

"**Party**" means the Service Provider or the AESO, as the context requires, and "**Parties**"

means both the Service Provider and the AESO.

**"Prescribed Form"** means in relation to any form referenced herein, the latest version of such form which is published on [www.aeso.ca](http://www.aeso.ca) or otherwise provided to the Service Provider, as such form may be amended or replaced by the AESO from time to time and without notice to the Service Provider.

**"Person"** includes a natural person, corporation, limited partnership, general partnership, joint stock company, joint venture, association, company, limited liability company, trust, bank, trust company, land trust, business trust or other organization, whether or not a legal entity, or government or any agency or political subdivision thereof.

**"Personal Information"** means "personal information" as defined under the FOIP Act.

**"Personnel"** means a Party's partners, directors, officers, employees, agents, subcontractors, representatives or servants.

**"Pilot Program"** means the pilot program developed by the AESO to test the ability of New Technology to provide the Services which are critical to the reliability of the System.

**"Planned Outage"** any Outage which is undertaken or utilized in respect of the schedule of planned maintenance provided by the Service Provider to the AESO in accordance with Section 3.9(a).

**"Pool Participant"** means a "pool participant" as such term is defined in the ISO Glossary.

**"Power Pool"** means the "power pool" as such term is defined in the EUA.

**"Proposal Date"** means the date on which the Service Provider submitted its proposal to the AESO in response to the RFP.

**"Receiving Party"** has the meaning ascribed to it in Section 9.1.

**"Records"** means "records" as defined under the FOIP Act.

**"Representatives"** means the AESO Representative and the Service Provider Representative.

**"Response" or "Responds"** means the change in real power (in MW) in the form of a reduction in real power consumption or an increase in real power production or a combination of the foregoing in accordance with the FFR Requirements.

**"Response Event Record"** has the meaning ascribed to it in Section 4.3 of the FFR Requirements.

**"Response Payment"** means the sum of the Hourly Response Payments for the applicable Month where the Service Provider's FFR Facility Responds.

**"Response Price"** means \$1000/MW.

**"Response Volume"** means, when a Response occurs in accordance with the FFR Requirements or this Agreement, the lesser of the Armed Volume, Actual Response Volume, or the Contract Volume at the time of the Response. In the event that the Response does not comply with the FFR Requirements, the Response Volume shall be deemed to be zero (0).

**"RFP"** means the Request for Proposals for Fast Frequency Response Service dated March 24, 2021 issued by the AESO.

"**SCADA**" means supervisory control and data acquisition.

"**SCADA Response Signal**" means a Directive issued by the AESO in the form of a SCADA signal sent from the System Controller.

"**Schedule**" means any schedule attached to and incorporated by reference into this Agreement, as further described in Section 2.3.

"**Scheduling Hour**" means for any given hour, the ten (10) minutes before the hour, the sixty (60) minutes in the hour and the ten (10) minutes following such hour for a total duration of eighty (80) minutes.

"**Service Provider**" means the Person identified as the Service Provider in the opening paragraph of this Agreement, and includes, as applicable, any successor thereto resulting from any merger, arrangement, or other reorganization or any continuance under the laws of another jurisdiction or any permitted assignee.

"**Service Provider Representative**" means the representative of the Service Provider responsible for managing all matters related to this Agreement on behalf of the Service Provider, as specified in Section 14.

"**Service Start Date**" means the date on which the AESO issues the Confirmation Notice.

"**Service Term**" means the period of time commencing upon 00:00 hours on the Service Start Date and continuing until 24:00 hours on the Expiry Date.

"**Services**" has the meaning ascribed to it in Section 3.1.

"**Source Asset**" means a "source asset" as such term is defined in the ISO Glossary.

"**State of Charge**" in relation to an FFR Facility that incorporates Energy Storage, means the level of charge (expressed as MWh) at any point in time.

"**System**" means "interconnected electric system" as such term is defined in the EUA.

"**System Controller**" means the AESO personnel authorized by the AESO to carry out its duty to direct the safe, reliable, and economic operation of the Alberta interconnected electric system pursuant to the EUA, and includes the dispatching of the energy market merit order and ancillary services merit order.

"**System Disturbance**" means "disturbance" as such term is defined in the ISO Glossary.

"**System Event**" means an event, which for the purposes of this Agreement, shall be deemed to be one (1) hour in duration (whether or not the actual duration is longer than one (1) hour) that causes the System to be in non-compliance with all or any applicable North American Electric Reliability Council disturbance control standards and/or causes the System Controller to shed firm load from the System.

"**Term**" has the meaning ascribed to it in Section 4.1.

"**Termination Notice**" has the meaning ascribed to it in Section 16.5.

"**Tolerance Excursion**" means, once Armed, when the Actual Volume falls below the Lower Tolerance Limit at any point in time.

"**Total Transfer Capability**" means the amount of real power the AESO determines can be

reliably transferred over the System under specified System conditions.

"UFLS" means "under frequency load shedding" as defined in the ISO Glossary.

"WECC" means the Western Electrical Coordinating Council or any successor organization.

2. **Interpretation.**

2.1 **References and Headings.** The expressions "herein", "hereto", "hereof", "hereby", "hereunder" and similar expressions shall refer to the provisions of this Agreement in their entirety and not to any particular section, subsection or other subdivision hereof. Where the word "including" or "includes" is used in this Agreement, it means "including (or includes) without limitation". References to Sections and Schedules herein refer to sections and schedules of or to this Agreement, unless the context otherwise requires. Any reference to time shall refer to Mountain Standard Time or Mountain Daylight Saving Time during the respective intervals in which each is in force in the Province of Alberta. The headings of the Sections, Schedules and any other headings, captions or indices in this Agreement are inserted for convenience of reference only and shall not in any way affect the construction or interpretation of this Agreement or any provision hereof. Where there is a reference to an ISO Rule that reference shall include any subsequent revisions, amendments, replacements, or modifications to that ISO Rule.

2.2 **Singular/Plural/Derivative.** Whenever the singular or masculine or neuter is used in this Agreement it shall be interpreted as meaning the plural or feminine or body politic or corporate, and vice versa, as the context requires. Where a term is defined herein, a capitalized derivative of such term shall have a corresponding meaning unless the context otherwise requires.

2.3 **Schedules.** All Schedules annexed to this Agreement shall be attached to and form part of this Agreement. The Schedules to this Agreement are as follows:

- (a) Schedule "A": FFR Facility Information; and
- (b) Schedule "B": FFR Eligibility and Requirements.

2.4 **Priority of Documents.** In the event of a conflict or inconsistency between the provisions of: (i) the main body of this Agreement; (ii) any Schedule; or (iii) any Exhibit; then, unless the Parties otherwise agree in writing, the following order of priority will apply to the extent of such conflict or inconsistency:

- (a) the main body of the Agreement, with any amendments having priority from most recent (highest priority) to first (lowest priority);
- (b) the Schedules, all with equal priority with any amendments having priority from most recent (highest priority) to first (lowest priority); and
- (c) the Exhibits.

2.5 **Statutory References.** Any reference to a statute, regulation, ISO Rule, or Alberta Reliability Standard shall include and shall be deemed to be a reference to such statute, regulation, ISO Rule, or Alberta Reliability Standard, and all amendments made thereto and in force from time to time, and to any statute, regulation, ISO Rule, or Alberta Reliability Standard that may be passed which has the effect of replacing, modifying, or supplementing the statute, regulation, ISO Rule, or Alberta Reliability Standard so referred.

2.6 **Computation of Time Periods.** Except as expressly set out in this Agreement, the computation of time referred to in this Agreement shall exclude the first day and include the last day of such period.

2.7 Currency. All dollar amounts referred to herein are expressed in Canadian dollars.

2.8 No Drafting Presumption. The Parties acknowledge that their respective legal counsel have reviewed and participated in settling the terms of this Agreement and the Parties agree that any rule of construction to the effect that any ambiguity is to be resolved against the drafting Party shall not be applicable in the interpretation of this Agreement.

3. Services.

3.1 Services. During the Service Term, the Service Provider shall supply FFR to the AESO from the FFR Facility in accordance with the FFR Requirements (the “**Services**”), and the AESO agrees to purchase the Services from the Service Provider, all in accordance with and subject to the terms and conditions contained in this Agreement.

3.2 Basic Requirements. During the Service Term, the Service Provider shall:

- (a) make the Contract Volume available for Arming to or for the account of the AESO in accordance with the terms of this Agreement;
- (b) offer no less than one (1) MW in one (1) hour during a consecutive thirty (30) day period during the Term;
- (c) comply with the FFR Requirements; and
- (d) comply with all Dispatches delivered to the Service Provider by the System Controller in accordance with the ISO Rules.

For clarity, the minimum offer requirement in Subsection 3.2(b) shall not apply to the extent that a Forced Outage, Planned Outage, or event of Force Majeure or Suspension under Section 3.11 exists and continues for the entire duration of such consecutive thirty (30) day period.

3.3 Operating and Regulatory Requirements.

- (a) The Service Provider shall, as it relates to the operation and maintenance of the FFR Facility and the provision of FFR therefrom, comply with Good Electric Industry Practice, the reliability management system requirements of the WECC and all relevant ISO Rules and Alberta Reliability Standards.
- (b) The Service Provider shall also comply with the terms and conditions of any forbearance granted by the MSA applicable to the Service Provider and the Pilot Program in order to permit the Service Provider to provide FFR.

3.4 Reporting and Communication.

- (a) During the Term, the Service Provider shall provide the AESO, at any time and from time to time at the request of the AESO, all information, data, and reports required to enable the AESO to verify the Service Provider’s compliance with the terms of this Agreement or to verify the capability of the FFR Facility to provide FFR.
- (b) During the Service Term, and without limiting the generality of the foregoing, the Service Provider shall provide the AESO, at any time and from time to time at the request of the AESO, all information, data, and reports: (i) required to enable the AESO to calculate the Monthly Payments; (ii) required to enable the AESO to evaluate the Service Provider’s compliance with ISO Rules and Alberta Reliability Standards; and (iii) as may otherwise be reasonably required to support the learning objectives

of the Pilot Program. Section 3.4(b)(iii) shall not apply to the extent such information, data, and reports includes commercially sensitive information of a non-affiliated third party and such commercially sensitive information is subject to a confidentiality or non-disclosure agreement between the Service Provider and the non-affiliated third party which prevents the disclosure of such commercially sensitive information to the AESO, provided the Service Provider notifies the AESO of any such agreement and, if requested by the AESO, uses Commercially Reasonable Efforts to obtain the prior written consent of the non-affiliated third party to disclose such commercially sensitive information to the AESO. The Service Provider shall also maintain the communication requirements as set forth in the FFR Requirements.

- (c) During the Service Term, the Representatives shall meet at least once every three (3) months at such times and places as may be mutually agreed upon by the Parties, acting reasonably, to discuss the Service Provider's performance in the Pilot Program and for the Service Provider to share any feedback regarding the Pilot Program.

3.5 Provision of Other Ancillary Services and Electricity Market Participation.

- (a) The Service Provider may, without prejudice to any other provision of this Agreement, including the AESO's rights of termination, participate in the provision of any other ancillary services to the AESO (including the provision of operating reserves); provided, however, that the Service Provider does not use the capacity (in MW) that it uses to offer or provide FFR under this Agreement to also simultaneously offer or provide any ancillary services to the AESO under any other ISO Rules or under any other agreement or arrangement.
- (b) The Service Provider acknowledges that the AESO will adjust the Service Provider's available MW(s) in the energy market in order to enable the Service Provider's participation in multiple markets and avoid the duplication of available MW(s) in both the energy market and in the provision of the Services. The Service Provider further acknowledges that this adjustment will: (i) result in a reduction of the Service Provider's available MW(s) in the energy market by an amount equal to the greater of the Service Provider's: (A) Offered Volume, and (B) Armed Volume, during each Scheduling Hour; and (ii) not apply when the combined British Columbia and Montana interconnection import Total Transfer Capability is less than or equal to sixty five (65) MW and the Service Provider has been Disarmed. The adjustment to the Service Provider's available MW(s) in the energy market will be reflected at approximately twenty-three minutes before the hour (XX:37) for those offers received prior to January 1, 2022, and twenty-five minutes before the hour (XX:35) for those offers received on or after January 1, 2022, based on the Offered Volume and following Dispatches for Armed Volume. For the avoidance of doubt, the Service Provider shall comply with: (A) all ISO Rules relating to its participation in the energy market, and (B) all ISO Rules and any agreements or arrangements relating to its participation in any ancillary service markets (including the market for operating reserves), while providing the Services.

3.6 Modifications to the FFR Facility. Prior to making any material modifications or changes to the FFR Facility, the Service Provider shall obtain the prior written consent of the AESO, which consent shall not be unreasonably withheld. Notwithstanding anything to the contrary, it shall be reasonable for the AESO to withhold its consent if such material modification or change: (i) is not in compliance with the FFR Requirements, including but not limited to the Eligibility Requirements; (ii) would result in an inability to provide the Contract Volume; or (iii) would otherwise result in a material adverse impact to the AESO.

3.7 Non-Exclusivity. Notwithstanding anything to the contrary in this Agreement, this Agreement shall be non-exclusive in nature, and the AESO shall at all times have the right to perform any of the Services itself or to contract with a third party to perform any service included in the



Services or any other obligations of the Service Provider in this Agreement.

- 3.8 No Minimum. Unless otherwise agreed to between the Parties in writing and executed by an authorized representative of each Party, the AESO shall have no obligation to purchase a minimum quantity of Services from the Service Provider at any time.
- 3.9 Outages.
- (a) The Service Provider shall report any Planned Outages to the AESO throughout the Service Term by providing the AESO with a schedule of such planned maintenance at least thirty (30) days prior to the start of the Service Term, detailing all such planned maintenance for the Service Term. If there are any changes to the dates or times of a Planned Outage, the Service Provider shall provide notice to the AESO at least thirty (30) days in advance of such Planned Outage.
  - (b) On the occurrence of any Forced Outage, the Service Provider shall promptly report the Forced Outage to the System Controller and shall submit a report, in the Prescribed Form, to the AESO within five (5) days. The Service Provider shall advise the System Controller of the cause and expected duration of the Outage.
- 3.10 Recovery Plan. In addition to any other rights or remedies the AESO may have, upon the occurrence of a Tolerance Excursion, a Failure to Supply, a failure to comply with the FFR Requirements, or any other failure to comply with this Agreement, the AESO may, on notice to the Service Provider, require the Service Provider to prepare and deliver within thirty (30) days, at the Service Provider's sole cost and expense, a plan which sets forth the cause of the Tolerance Excursion, Failure to Supply, or failure to comply and the work that the Service Provider will undertake to remedy the cause. Upon the AESO's review and written approval (not to be unreasonably withheld) of such plan, the Service Provider shall forthwith undertake and implement the operational changes, maintenance, technical additions or modifications or replacements or other remedial work set forth and described in such plan. The Service Provider shall notify the AESO upon completion of the work.
- 3.11 Suspension. In the event the Service Provider fails to provide an acceptable recovery plan in accordance with Section 3.10 or the AESO believes the Service Provider is not in compliance with the FFR Requirements or any other requirement of this Agreement, the AESO may suspend the Service Provider from providing the Services until such time as the Service Provider provides an acceptable recovery plan in accordance with Section 3.10 or remedies any non-compliance with the FFR Requirements or other requirement of this Agreement, as determined by the AESO in its sole and absolute discretion. This right is in addition to any other rights or remedies the AESO may have.

4. **Commencement and Conditions Precedent**

- 4.1 Term. The term of this Agreement ("**Term**") shall commence upon the Effective Date and shall continue until 24:00 hours on the Expiry Date. For certainty, the Term and Service Term shall not be extended in the event of Force Majeure.
- 4.2 Conditions Precedent. The provisions of this Agreement (other than this Section 4.2 and any other Section that is expressly stated to take effect from the Effective Date) shall be subject to and conditional upon the Service Provider demonstrating to the AESO's reasonable satisfaction that the FFR Facility: (i) is operational; and (ii) has successfully completed the Capability Test, (together, the "**Conditions Precedent**") before the Long Stop Date. The Service Provider shall use reasonable efforts to satisfy the Conditions Precedent and shall provide the AESO with reasonable evidence of satisfaction of the Conditions Precedent, including the Certified Report and Communication Confirmation, by the Long Stop Date and the AESO shall, acting reasonably, notify the Service Provider as soon as reasonably practicable after receipt of evidence either: (i) that it considers the Conditions Precedent to

have been satisfied and that the Service Start Date has therefore occurred (the “**Confirmation Notice**”); or (ii) that it considers the Conditions Precedent have not been satisfied. If the AESO issues a notice that it considers the Conditions Precedent have not been satisfied or if no evidence, including the Certified Report and Communication Confirmation, is received by the Long Stop Date, this Agreement (to the extent in force) shall terminate automatically and the Service Provider shall be liable for, and shall pay to the AESO, the Liquidated Damages. The AESO may collect such Liquidated Damages in accordance with Sections 11.2 and 11.4.

5. **Compliance with Applicable Laws.**

5.1 **Compliance.** The Service Provider shall comply with and shall require and ensure the Service Provider’s Personnel comply with all Applicable Laws.

5.2 **Reliability Standards.** Without limiting the generality of Section 5.1, the Service Provider shall comply with all Alberta Reliability Standards and all ISO Rules, as amended, supplemented, replaced or otherwise modified from time to time.

5.3 **Good Electric Industry Practice.** The Service Provider shall at all times adhere to Good Electric Industry Practice in performing its obligations under this Agreement; provided that no provision of this Agreement shall be interpreted as requiring the Service Provider to place at risk any equipment, personnel, the public or the environment or to be in non-compliance with Applicable Laws or operating licenses or permits applicable to the FFR Facility.

5.4 **Obligations at Law.** Nothing in this Agreement modifies, alters, reduces, or affects the Service Provider’s obligations, liabilities, or accountability under Applicable Laws. In the case of any conflict, ambiguity, or inconsistency between or among any of the provisions or requirements of this Agreement and the provisions or requirements of any Applicable Law, Alberta Reliability Standard or ISO Rule, the more restrictive or stringent provisions or requirements will govern.

6. **Representations and Warranties.**

6.1 **Representations and Warranties.** The Service Provider represents, warrants and covenants to and in favour of the AESO that as of the Effective Date and continuing throughout the Term:

- (a) it is a [corporation/partnership/limited liability partnership], duly organized, validly existing under the laws of its jurisdiction of formation, and duly registered and authorized to carry on business in the Province of Alberta;
- (b) it has the requisite capacity, power and authority to execute this Agreement and other documents required to be delivered under this Agreement and to perform all obligations to which it thereby becomes subject. This Agreement is binding and enforceable against the Service Provider in accordance with its terms;
- (c) it has taken all necessary actions to authorize the execution, delivery and performance of this Agreement, including the transactions contemplated herein in accordance with the provisions of this Agreement. This Agreement has been duly executed and delivered by the Service Provider, and this Agreement constitutes, and all other documents executed and delivered on behalf of the Service Provider hereunder shall, when executed and delivered constitute, valid and binding obligations of the Service Provider enforceable in accordance with their respective terms and conditions;
- (d) the execution, delivery and performance of the Services and any deliverables specified in this Agreement are not and will not be in violation or breach of, or be in conflict with or require any consent, authorization or approval under: (i) any term or provision of the constating documents of the Service Provider; (ii) any permit or authority to which the Service Provider is a party or by which the Service Provider is



- bound; (iii) any term or provision of a binding contract with a third party; or (iv) any Applicable Law;
- (e) there are no actions, suits or proceedings pending or, to the knowledge of the Service Provider, threatened against the Service Provider or any of its Affiliates seeking relief which would prevent or materially hinder the performance of the Services;
- (f) it is duly registered under the Part IX of the *Excise Tax Act* (Canada) and its GST registration number is \_\_\_\_\_, if applicable;
- (g) it is the legal owner of the FFR Facility or has the rights to provide FFR from the FFR Facility in an amount equal to the Contract Volume;
- (h) it meets the Eligibility Requirements and shall continue to meet the Eligibility Requirements;
- (i) as of the start of the Service Term, it shall participate in the wholesale electricity market as a Market Participant and be a Pool Participant with respect to the FFR Facility, and shall continue to participate in the wholesale electricity market as a Market Participant and be a Pool Participant with respect to the FFR Facility for the duration of the Service Term;
- (j) it shall maintain such skills, resources, subcontractors and Personnel necessary to perform the Services and meet its obligations under this Agreement;
- (k) it shall provide only fully trained and qualified individuals to perform the Services;
- (l) it shall provide all the equipment, Personnel, supplies, consumables, superintendence and labour necessary to perform any Services required by this Agreement; and
- (m) it has and will maintain all licenses, permits, consents and authorities necessary to perform the Services.

6.2 Acknowledgement. The Service Provider acknowledges that the representations, warranties and obligations under this Agreement are reasonable, necessary and fundamental to the AESO's ability to perform its statutory duties, and the Service Provider acknowledges and agrees that any breach of this Agreement by the Service Provider and the Service Provider's Personnel could result in irreparable harm with respect thereto.

7. Compensation.

7.1 Monthly Payment. In consideration of the Service Provider's supply of FFR, the AESO shall, for each Month during the Service Term, pay to the Service Provider an amount (the "**Monthly Payment**") as the sum of:

- (a) the Availability Payment;
- (b) the Arming Payment; and
- (c) the Response Payment,

which shall be subject to Sections 7.2 and the Service Provider's compliance with this Agreement.

7.2 Adjustment and Exceptions.

- (a) In the event of a Response in the form of an increase in real power production, the Response Payment will be reduced by the amount of any Power Pool payments the

Service Provider receives as a result of such Response. Notwithstanding the foregoing, the Service Provider shall not receive any Response Payments for the hours when it performs any Capability Tests or other tests required by this Agreement.

- (b) In the event of: (i) a Tolerance Excursion, (ii) a Failure to Supply or breach of Section 3.5(a), or (iii) the combined British Columbia and Montana interconnection import Total Transfer Capability is less than or equal to sixty five (65) MW, the Service Provider shall not be entitled to receive, and the AESO may deduct, the Hourly Availability Payments, Hourly Arming Payments, and Hourly Response Payments for the hours when such events occur.
- (c) The AESO may net and set-off pursuant to Section 7.7.

7.3 Invoices. The Service Provider shall, no later than ten (10) Business Days following the end of each Month during the Service Term, prepare and submit to the AESO an invoice, in the form as prescribed by the AESO from time to time, for the Monthly Payment due from the AESO to the Service Provider in respect of the Services performed or provided during the previous Month. Such invoice shall be accompanied by backup information specifying details relevant to the calculation of the amounts owing for such Month, including a list of the Planned Outages, Forced Outages, Tolerance Excursions, Failures to Supply, and Events of Force Majeure. In the event the information provided by the Service Provider is inconsistent with that provided by the System Controller, then, for the purposes of this Agreement and to the extent of such inconsistency, the information provided by the System Controller shall take precedence. With respect to any inconsistency related to the combined British Columbia and Montana interconnection import Total Transfer Capability, the information available on the AESO's website shall take precedence. In the event the Service Provider incorrectly calculates any Monthly Payment which results in an overpayment by the AESO to the Service Provider then the AESO shall have the right to net and set-off subsequent Monthly Payments against the amount of such overpayment pursuant to Section 7.7. All invoices shall be sent to the following address:

AESO  
Attention: Ancillary Services Payable  
2500, 330 – 5th Avenue SW Calgary, Alberta  
T2P 0L4  
or by e-mail to [aspayables@aeso.ca](mailto:aspayables@aeso.ca)

7.4 Waiver. The Service Provider acknowledges and agrees that the AESO shall not be responsible or liable for, and the Service Provider waives any and all claims with respect to, any Monthly Payment for which the Service Provider fails to provide an invoice within ninety (90) days of the performance or provision of the applicable Services.

7.5 Payment. The AESO shall, with respect to any invoice for a Month during the Service Term which is properly prepared and submitted to the AESO in accordance with the requirements of Section 7.3, pay the amount of such invoice to the Service Provider on or before the twentieth (20th) Business Day of the following Month, unless the AESO provides notice to the Service Provider that it is disputing the invoice, in whole or in part. In such case the AESO shall be entitled to withhold the disputed amount until the dispute is resolved between the Parties, at which time the AESO shall only be required to pay the amounts the Parties have agreed upon or the amounts otherwise determined as payable. If the time required for payment by the AESO for amounts owed under this Agreement falls on a day that is not a Business Day, the time required for such payment shall extend to the next Business Day. The AESO shall pay all invoice amounts by direct transfer to the bank account of the Service Provider set forth below, or such other account or bank as the Service Provider may stipulate by notice to the AESO.

Name of Bank:

Address:  
Bank No.:  
Transit No.:  
Account No.:

7.6 Taxes. The Service Provider shall file and pay any applicable income and sales taxes. All Monthly Payments shall be exclusive of taxes, as applicable. The Service Provider shall be liable for and shall indemnify the AESO in accordance with Section 10 hereof in respect of any claims arising from the Service Provider's non-compliance with tax laws.

7.7 Set-Off. The AESO may net and set-off any Monthly Payments due to the Service Provider against any amounts owing by the Service Provider to the AESO. The remedy provided for in this Section 7.7 shall be without prejudice and in addition to any right which the AESO is at any time otherwise entitled.

8. **Audit and Records.**

8.1 During the Term and for a period of two (2) years thereafter, the AESO shall have the right, during normal business hours and upon reasonable notice to the Service Provider, to conduct an audit of the Service Provider's books and Records relating to the Services performed under this Agreement and to the extent necessary to confirm or investigate the Service Provider's compliance with the terms of this Agreement, including compliance with confidentiality, privacy and security terms, and where applicable the calculation of any Monthly Payment paid or payable by the AESO pursuant to this Agreement. The Service Provider shall also provide the AESO and its agents with access to its recovery plan and related books and Records required pursuant to Section 3.10, and shall make available to the AESO and its agents such financial and other information as the AESO shall reasonably request. If there is any revision to the Monthly Payments paid or payable by the AESO as a result of an audit, within thirty (30) days of the audit, the Service Provider shall pay to the AESO the full amount of any credit or the AESO shall pay to the Service Provider the full amount of any shortfall, as the case may be.

9. **Confidentiality.**

9.1 Confidential Information. "**Confidential Information**" means non-public information that the Party disclosing the Confidential Information ("**Disclosing Party**") designates to the Party receiving the Confidential Information ("**Receiving Party**") as being confidential or which, under the circumstances, would reasonably be known to be confidential or deserving of confidential treatment. Confidential Information includes locations of the AESO Operations Complex (AOC), Back-up Coordination Centre, Primary Data Centre and Secondary Data Centre, the Disclosing Party's confidential and proprietary information, any data, material, analyses, compilations, finances, business plans, marketing plans, services, budgets, forecasts, models, capital and operating costs, sales histories, market projections, creations, inventions, trade secrets, personal or employee information, information relating to facilities, suppliers, vendors, licensors, licensees, customers or employees, network, servers, workstation and security device addresses, information technology authentication and authorization information, security sensitive information (including information regarding security threats, vulnerabilities, impacts, safeguards, incidents, analyses or plans), past or present projects or products, projects or products under consideration, and any other matter relating to the operations, business, financial affairs or intellectual property of the Disclosing Party. For greater certainty, "Confidential Information" shall not include any information, however designated, that:

- (a) is now or becomes generally available to the public other than as a result of a breach of this Agreement by the Receiving Party;
- (b) is disclosed in good faith to the Receiving Party by a third party (who is not disclosing the same on behalf of the Disclosing Party) having legitimate possession and the right

to make such disclosure without passing on or violating any obligation of confidence;

- (c) was already known by the Receiving Party without any obligation of confidence prior to disclosure or access hereunder by the Disclosing Party; or
- (d) was developed independently by the Receiving Party prior to disclosure of or access to any of the Disclosing Party's Confidential Information, or by Personnel of the Receiving Party who have not had access to the Disclosing Party's Confidential Information (both as evidenced by written records).

9.2 Disclosure and Use Restrictions. The Receiving Party agrees that it shall:

- (a) use the Disclosing Party's Confidential Information solely to the extent required to fulfill the purposes of this Agreement;
- (b) not disclose the Disclosing Party's Confidential Information to any third parties (including Affiliates) except as may be specifically and expressly permitted in Section 9.3 below;
- (c) take all reasonable precautions, and in any event not less than those precautions used to protect its own Confidential Information, to keep the Disclosing Party's Confidential Information in the strictest confidence and to protect it from disclosure (including maintaining adequate security with respect to its facilities, Receiving Party's Personnel, and third parties, and implementing appropriate security and access controls to ensure that no unauthorized Persons are able to access the Disclosing Party's Confidential Information);
- (d) not reproduce or copy in any medium in whole or in part any of the Disclosing Party's Confidential Information without the written approval of the Disclosing Party in each instance; and
- (e) not use or exploit the Disclosing Party's Confidential Information for creating, marketing or aiding in the creation or marketing, of any business opportunity.

9.3 Permitted Use and Disclosure. The Receiving Party may only:

- (a) disclose the Disclosing Party's Confidential Information to: (i) the Receiving Party's personnel or employees (or to the Receiving Party's agents (including the Service Provider's subcontractors) who are bound to keep such information confidential); (ii) legal counsel that have a need to know the Confidential Information for the purposes of this Agreement; and (iii) where the AESO is the Receiving Party, the MSA and other Government Entities;
- (b) disclose or use the Disclosing Party's Confidential Information for purposes other than those expressly permitted in this Agreement where such disclosure or use is expressly approved in writing by the Disclosing Party in each instance (or as otherwise permitted pursuant to Section 9.9(b)); and the Disclosing Party, in its sole discretion, may determine whether any such disclosure shall be performed by the Receiving Party in a secure and encrypted manner; and
- (c) subject to Section 9.6, disclose the Disclosing Party's Confidential Information in the event that, and only to the extent that, such disclosure is required by Applicable Laws.

9.4 Proprietary Rights and License.

- (a) All Confidential Information and materials are and shall remain the exclusive property of the Disclosing Party. The Receiving Party shall not acquire any right, title or interest in and to the Disclosing Party's Confidential Information. Nothing in this Agreement is

intended to grant any rights to the Receiving Party under any patent, copyright, trademark, trade secret or any other intellectual property right of the Disclosing Party, nor shall this Agreement grant the Receiving Party rights in or to the Confidential Information and materials of the Disclosing Party except as expressly set forth herein.

- (b) The Service Provider hereby grants to the AESO a perpetual, non-exclusive, sub-licensable, transferable, irrevocable, royalty-free, fully paid-up license to use, modify, or reproduce all intellectual property of the Service Provider embedded within any and all deliverables, information, and data provided to the AESO pursuant to this Agreement or otherwise in relation to the Pilot Program, including but not limited to any suggestions, comments, or feedback that may be provided by the Service Provider. The Service Provider hereby waives any moral rights in such intellectual property. The Service Provider agrees that no feedback, comments, or suggestions will be directly attributed to the Service Provider.
  - (c) For the avoidance of doubt, any and all intellectual property that is created or developed by the AESO or the Service Provider as a result of the Pilot Program shall be the exclusive property of the AESO. The Service Provider shall provide the AESO will all assistance reasonably required to vest such rights of ownership in the AESO and hereby waives any moral rights in such intellectual property. This Section 9.4(c) shall not apply to: (i) any intellectual property of the Service Provider existing prior to the Effective Date or any improvements to such pre-existing intellectual property that are created or developed by the Service Provider; or (ii) any intellectual property created or developed by a non-affiliated third party responsible for the manufacture and supply of any New Technology.
- 9.5 Unauthorized Use. The Receiving Party shall promptly notify the Disclosing Party of any unauthorized use, possession or disclosure of the Disclosing Party's Confidential Information of which it becomes aware.
- 9.6 Disclosure Pursuant to Applicable Laws. Should the Receiving Party, or any Person to whom Confidential Information is transmitted directly or indirectly by the Receiving Party, be required by Applicable Laws to disclose any of the Disclosing Party's Confidential Information, to the extent permitted by Applicable Laws, the Receiving Party shall forthwith notify the Disclosing Party, and upon the request of the Disclosing Party, shall cooperate reasonably with the Disclosing Party in contesting such disclosure or seeking a protective order or other appropriate remedy within and subject to all Applicable Laws.
- 9.7 Return of Confidential Information. The Receiving Party, upon request by the Disclosing Party and in any event upon the termination of this Agreement, shall immediately return or destroy, at the Disclosing Party's option, the Disclosing Party's Confidential Information and all copies thereof in any form whatsoever which are in the possession, charge, control or custody of the Receiving Party, together with all other equipment or information provided to the Receiving Party by the Disclosing Party during the Term. If requested by the Disclosing Party, the Receiving Party shall provide an officer's certificate confirming deletion or the return of all such copies, equipment and information and that it has taken measures to ensure that any individual or party permitted pursuant to this Agreement to perform any part of the Services has not retained any copies or reproductions, electronic or otherwise.
- 9.8 Obligation to Disclose. Notwithstanding anything to the contrary, this Agreement shall not obligate the Disclosing Party to disclose or otherwise provide access to any particular Confidential Information or any particular portion thereof and such disclosure or access, if any, is provided at the Disclosing Party's discretion.
- 9.9 Publicity and Consent to Additional Use and Disclosure.
- (a) Without the prior written consent of the other Party, neither Party shall make any press



release, advertisement, public disclosure or other public announcement or statement with respect to this Agreement or relationship between the AESO and the Service Provider, including the use of the either Party's name or logo or trademark, in advertisements, marketing materials, press releases or other documentation or announcements, except as mandated by Applicable Laws.

- (b) Notwithstanding 9.9(a) or anything else to the contrary, the AESO may make a press release, advertisement, public disclosure, or other public announcement disclosing: (i) the pro forma version of this Agreement; (ii) the identity of the Service Provider, and its participation in the Pilot Program; (iii) the Contract Volume; (iv) the Term; (v) any feedback, comments, and suggestions provided by the Service Provider; and (vi) data relating to the Pilot Program, including but not limited to a description of the FFR Facility (including all information listed in Schedule "A") and, subject to and in accordance with the *Fair, Efficient and Open Competition Regulation* (Alberta), any data relating to such FFR Facility's participation in the Pilot Program and any compliance data relating to such FFR Facility (if commercially possible, the AESO shall anonymize, by aggregation or otherwise, any such data), in a manner intended to report on the Pilot Program, without the prior written consent of the Service Provider. The Service Provider consents and agrees to such disclosure by the AESO.

10. **Indemnity.**

10.1 **General Indemnity.** The Service Provider shall be liable for and shall indemnify and hold the AESO, including AESO Personnel, harmless from and against all losses, expenses (including all legal expenses on a solicitor and own client basis), damage and injury to property and Persons, for all third party claims (whether in contract or tort), demands, suits or actions arising from or related to:

- (a) any material breach of this Agreement, including any breach of privacy or confidentiality;
- (b) any inaccuracy or breach of any representation or warranty made by the Service Provider;
- (c) any payment or other obligation of the Service Provider to a third party relating to the Services rendered in connection to this Agreement;
- (d) the negligence or willful misconduct of the Service Provider, including Service Provider Personnel in the performance of the Services whether occurring on the AESO's premises or elsewhere; or
- (e) any and all loss, damage or liability for the infringement, violation or misappropriation, actual or alleged, of a third party patent, trademark, trade secret or copyright by the AESO arising from or in connection with the Services, related deliverables or materials of the Service Provider.

10.2 **Defence of Claims.** The Service Provider shall defend the AESO against any action brought for any of the foregoing claims and shall satisfy any judgment against the AESO, including AESO Personnel, resulting therefrom. Notwithstanding the foregoing, at its own cost, the AESO may participate in the defense of any action to which it is a party without relieving the Service Provider of its responsibility for the defense of such action. The AESO, upon receiving notice of any action brought against it, shall notify the Service Provider of the action and shall render all reasonable assistance required by the Service Provider in the defense of the action.

10.3 **Settlement of Claims.** No settlement of a claim shall be entered into by the Service Provider without the prior written consent of the AESO, which consent will not be unreasonably withheld.

10.4 Waiver of Claims. The Service Provider shall make no claim or demand against the AESO for any:

- (a) personal injury (including death); or
- (b) claim, expense, or loss from damage to property suffered or sustained by the Service Provider or any other Person;

which arises out of any act or omission under this Agreement, negligence or errors or omissions of the Service Provider, and the Service Provider hereby waives as against the AESO all such claims and demands.

11. Damages.

11.1 Direct Damages. Each of the Parties shall be liable to the other for any direct damages arising out of or relating to its performance or failure to perform under this Agreement, whether based on an action or claim in contract, equity, negligence, tort or otherwise, for any event, act or omission.

11.2 AESO Procurement Costs. In the event the Agreement terminates in accordance with Section 4.2 or the AESO terminates the Agreement for cause in accordance with Section 16.1, the Service Provider shall pay to the AESO an amount equal to \$40,000 (the "**Liquidated Damages**"). The Parties intend that the Liquidated Damages constitute compensation and not a penalty. The Parties acknowledge and agree that the AESO's harm or actual damages caused by the AESO terminating the Agreement for cause would be impossible or very difficult to accurately estimate as of the Effective Date, and that the Liquidated Damages are a reasonable estimate of the anticipated or actual harm or actual damages, including the costs associated with conducting procurement processes for replacement Services, that might arise in the event that the AESO terminates the Agreement for cause pursuant to Section 16.1.

11.3 Material Adverse Change. The Service Provider shall provide the AESO with notice of any Material Adverse Change within two (2) Business Days after any officer of the Service Provider becomes aware that a Material Adverse Change has occurred.

11.4 Financial Security. Within fifteen (15) Business Days from the Effective Date or such later date as agreed to by the Parties, the Service Provider shall provide Financial Security to the AESO in the amount of the Liquidated Damages and for the duration of the Term, all in accordance with Rule 103.3 of the ISO Rules. In the event the Agreement terminates in accordance with Section 4.2 or the AESO terminates this Agreement in accordance with Section 16.1, the AESO may avail itself of the Financial Security to settle any Financial Obligations of the Service Provider that arise in relation to this Agreement.

11.5 Consequential Damages. Except for a claim for:

- (a) personal injury proximately caused by the Service Provider;
- (b) the Service Provider's breach of its confidentiality obligations under this Agreement;
- (c) third party intellectual property infringement; or
- (d) Liquidated Damages pursuant to Section 11.2,

in no event is the Service Provider or the AESO liable for any indirect, special, exemplary, punitive, consequential or incidental damages (including lost profits, lost revenues and other economic losses), however caused and regardless of whether such damages are foreseeable or whether the Service Provider or the AESO has been advised of their possibility.

11.6 Limiting Liability.

- (a) Nothing herein shall be construed as limiting the application or the protection of the EUA or LPR.
- (b) In no event shall a Party's liability to the other Party for any direct damages, whether based in contract, tort, or otherwise exceed: (i) one million dollars (\$1,000,000), or (ii) the total amount of Monthly Payments received by the Service Provider under this Agreement, whichever amount is greater. Notwithstanding the foregoing, nothing herein shall limit the Service Provider's liability to the AESO for any damages caused by the Service Provider's gross negligence, willful misconduct, or breach of Sections 9.1 – 9.8.

12. Change in Law.

12.1 Change in Law. If a Change in Law occurs during the period beginning on the Proposal Date and ending on the Expiry Date, and the Service Provider incurs (or will incur) additional net costs in excess of fifty thousand dollars (\$50,000) as a direct result of providing the Services, then the AESO will have the option to either: (i) pay the Service Provider the actual amount of such increase after it has been incurred by the Service Provider, to the extent such increase exceeds fifty thousand dollars (\$50,000); or (ii) terminate this Agreement, provided that:

- (a) the Service Provider delivers a notice to the AESO within twenty (20) Business Days of the occurrence of such Change in Law, setting forth reasonable details in respect of the scope, nature and anticipated impact thereof, and the steps the Service Provider has taken (or will be taking) to address and mitigate such anticipated impact; and
- (b) the Service Provider uses all Commercially Reasonable Efforts and takes all reasonable steps to mitigate the adverse impact of such Change in Law.

Notwithstanding anything to the contrary, the Service Provider shall not be entitled to recover any lost profits, lost revenues, or other economic losses as the result of a Change in Law.

13. Injunctive Relief.

13.1 Without intending to limit the remedies available to the AESO, the Service Provider acknowledges that damages at law may be an insufficient remedy to the AESO in view of the irrevocable harm which may be suffered if the Service Provider violates any of the terms of Section 9 and agrees that the AESO may apply for and have injunctive relief in any court of competent jurisdiction specifically to enforce any such covenants upon the breach or threatened breach of any such provisions, or otherwise specifically to enforce any such covenants, and the Service Provider hereby waives all defenses to the strict enforcement thereof by the AESO.

14. Notice.

14.1 Any notice, consent, demand or other communication that may be or is required to be given pursuant to this Agreement shall be in writing and shall be delivered by hand, by prepaid courier service or by certified registered mail, postage prepaid and return receipt requested, or electronic mail, to the address of the AESO or the Service Provider, as the case may be, set forth below. Any notice or other communication contemplated herein shall be deemed to have been delivered and received by the other Party:

- (a) upon delivery when delivered by hand; or



- (b) one (1) Business Day after delivery, if delivered by courier; or
- (c) five (5) Business Days after being sent by pre-paid single registered mail to an address set forth herein; or
- (d) one (1) Business Day after being sent by confirmed electronic mail.

Addresses:

To the AESO:

Alberta Electric System Operator  
2500, 330 – 5<sup>th</sup> Avenue SW Calgary, Alberta  
T2P 0L4

Attention: Commercial Manager (the “**AESO Representative**”)  
Email: [Commercial.Services@aeso.ca](mailto:Commercial.Services@aeso.ca)

With a copy to:

Alberta Electric System Operator  
2500, 330 – 5<sup>th</sup> Avenue SW Calgary, Alberta  
T2P 0L4

Attention: General Counsel  
Email: [General.Counsel@aeso.ca](mailto:General.Counsel@aeso.ca)

To the Service Provider:

Attention: (the “**Service Provider Representative**”)  
Tel:  
Email:

With a copy to:

Attention: Tel:  
Email:

Either Party may change its address for notices herein by providing written notice to the other Party in accordance with this Section 14.

## 15. **Dispute Resolution.**

- 15.1 **Resolution by Representatives.** In the event of a dispute arising out of or relating to this Agreement, the AESO Representative and the Service Provider Representative shall make Commercially Reasonable Efforts to resolve the dispute in good faith and in as timely a fashion as possible, but in any case, in not more than twenty (20) Business Days from the time the dispute is first discussed formally by such representatives. A Party wishing to formally discuss the dispute must provide written notice to the other representative stating the nature of the dispute, a proposed schedule of meetings to discuss the dispute, and possible options to resolve the dispute.
- 15.2 **Resolution by Senior Officers.** If the Representatives are unable to resolve the dispute within the timeframe stated in Section 15.1, then each Party shall appoint a senior officer in their organization, or that person’s designate, to resolve the dispute. The senior officer shall arrange a suitable schedule of meetings to discuss the dispute and shall attempt to resolve it, in good faith, in as timely a fashion as possible, but in any event, in not more than twenty (20) Business Days.
- 15.3 **Arbitration.** In the event that the Parties fail to resolve the dispute accordance with Section

15.2, the Parties may proceed to binding arbitration. Arbitration shall be conducted in accordance with the Arbitration Act (Alberta). The Parties shall endeavor to select a mutually acceptable arbitrator knowledgeable about issues relating to the subject matter of this Agreement. The arbitrator shall not have the authority, power, or right to alter, change, amend, modify, add, or subtract from any provision of this Agreement or to award punitive damages. The arbitrator shall have the power to issue mandatory orders and restraining orders in connection with the arbitration. The award rendered by the arbitrator shall be final and binding on the Parties, and judgment may be entered thereon in any court having jurisdiction. The agreement for arbitration shall be specifically enforceable under Alberta arbitration law. During the continuance of any arbitration proceeding, the Parties shall continue to perform their respective obligations under this Agreement. Any arbitration shall take place in Calgary, Alberta.

16. **Termination.**

16.1 Termination for Cause by the AESO. The AESO may elect to terminate this Agreement, in whole or in part and at its sole discretion, upon notice to the Service Provider, if:

- (a) the Service Provider becomes Insolvent;
- (b) notwithstanding anything in Section 17.3, any event or events of Force Majeure, in aggregate, last longer than sixty (60) days in duration during the Term;
- (c) if the Service Provider fails to comply with Section 3.2(b);
- (d) the Service Providers fails to deliver an acceptable recovery plan or fails to complete the work described in an approved recovery plan in accordance with Section 3.10;
- (e) the Service Provider fails to comply with or perform any of the terms of this Agreement, and any such failure continues for a period of thirty (30) days after the date of receipt of written notice from the AESO to remedy or cure such failure; or
- (f) the Service Provider fails to comply with or perform any of the terms of any other agreement between the Service Provider and the AESO, and such failure is not cured or remedied within the applicable cure period, if any, specified in such agreement.

16.2 Termination due to Change in Law by the AESO. If any Change in Law occurs during the Term, then the AESO may elect to terminate this Agreement.

16.3 Termination for Convenience by the AESO. The AESO may, at any time, elect to terminate this Agreement; provided it shall, at the time of such election, provide the Service Provider with thirty (30) days' written notice. If the AESO elects to terminate this Agreement pursuant to this Section 16.3, the AESO shall pay the Service Provider fifty thousand dollars (\$50,000).

16.4 Termination for Cause by the Service Provider. The Service Provider shall have the right to terminate this Agreement for cause solely in the event of any failure by the AESO to make timely payment of Monthly Payments (not including withholding by the AESO for a good faith dispute) which failure is not cured within thirty (30) Business Day's following written notice thereof.

16.5 Termination due to Change in Law by the Service Provider. If any Change in Law occurs during the Term which materially reduces or limits the liability protection which the Service Provider, as of the Proposal Date, is entitled to under the EUA and LPR with respect to its delivery of Services hereunder, then the Service Provider may elect to terminate this Agreement, provided that the Service Provider delivers a notice to the AESO within twenty (20) Business Days of the occurrence of such Change in Law setting forth reasonable details with respect to the manner in which its liability protection has been materially reduced or

limited (“**Termination Notice**”). The AESO may elect within ten (10) Business Days of receiving any such Termination Notice to fully indemnify the Service Provider in respect of such reduced or limited liability protection by providing the Service Provider with written confirmation of same (“**Confirmation of Indemnity**”). Upon the AESO’s delivery of a Confirmation of Indemnity within such ten (10) Business Day period, the Termination Notice will be deemed void ab initio. If the AESO does not deliver a Confirmation of Indemnity within such ten (10) Business Day period, then this Agreement shall terminate on the later of (a) the expiration of such ten (10) Business Day period and (b) the date that such Change in Law becomes effective in respect of the Service Provider.

16.6 Termination due to Loss of Forbearance. If the MSA revokes any forbearance required for the operation of the Pilot Program and the AESO is unable to obtain new forbearance from the MSA, this Agreement shall terminate on the date such revocation becomes effective. Upon becoming aware of any such revocation, the AESO shall provide prompt written notice to the Service Provider.

16.7 Procedures upon Termination.

- (a) Upon receipt or delivery of a notice of termination with respect to this Agreement for any reason, the Service Provider shall: (i) take all reasonable steps necessary to minimize any costs arising from the commitments made prior to the date of its receipt of the notice of termination; (ii) in the period prior to the effective date of termination and at its own cost (unless the Agreement has been terminated pursuant to Section 16.4), assemble in an orderly fashion, all documents and other information (including information in electronic form) relating to the Services and deliver the same to the AESO; and (iii) subject to having complied with its obligations pursuant to this Agreement, be entitled to payment for the Services performed prior to the date of termination as specified in this Agreement.
- (b) Other than total payment for the Services rendered and, if applicable, any payment owed pursuant to Section 16.3, the AESO shall have no further liability to the Service Provider or its Affiliates, the Service Provider Personnel, for any sum whatsoever, including without limitation, loss of profits, or any other losses resulting from the early termination of all or part of the Services.

16.8 Effect of Termination.

- (a) Neither termination nor expiration of this Agreement shall relieve either Party of liabilities accrued prior to termination or any liability, obligation or agreement which is to survive or be performed after such termination or expiration. The Parties shall cooperate in good faith after the termination or expiration of this Agreement to fulfill any such liabilities, obligations or agreements.
- (b) Termination shall be without prejudice to any other rights or remedies the Parties may have at law or in equity.

17. General.

17.1 Governing Law. This Agreement shall be governed by and interpreted in accordance with the laws of the Province of Alberta and the federal laws of Canada applicable therein, excluding any conflict of laws principles that may apply therein. The Parties irrevocably consent, submit and attorn to the jurisdiction of the courts in the Province of Alberta and the courts of appeal therefrom.

17.2 Survival. The provisions of Sections 1, 2, 7.7, 7.8, 8, 9, 10, 11, 13, 14, 15, 16.7, 16.8, 17.1, 17.2, 17.5, 17.6, 17.7, 17.8, and 17.9 shall survive termination of this Agreement.

- 17.3 Force Majeure. Notwithstanding any other provision of this Agreement, neither the Service Provider nor the AESO shall be liable for any failure or delay in complying with any obligation imposed on such Party under this Agreement if:
- (a) the failure or delay arises from, or is in connection with, an event of Force Majeure;
  - (b) that Party, on becoming aware of the event of Force Majeure, promptly notifies the other Party in writing of the nature of, the expected duration of, and the obligation(s) affected by, the event of Force Majeure; and
  - (c) that Party uses its Commercially Reasonable Efforts to: (i) mitigate the effects of the event of Force Majeure on the performance of that Party's obligations under this Agreement; and (ii) perform that Party's obligations which are not affected by the event of Force Majeure in a timely manner.
- 17.4 Amendment. This Agreement shall not be amended except by a written amending agreement which expressly states that it is intended to amend this Agreement by cross reference to the section of the Agreement to be overridden, executed by authorized signing officers of each of the Parties.
- 17.5 Severability. Whenever possible, each provision of this Agreement shall be interpreted in such a manner as to be effective and valid under Applicable Laws, however, each provision of this Agreement is intended to be severable and if any provision is determined by a court of competent jurisdiction to be illegal, invalid or unenforceable for any reason whatsoever, such provision shall be severed from this Agreement and will not affect the legality, validity or enforceability of the remainder of this Agreement or any other provision hereof.
- 17.6 Assignment. The Service Provider shall not, without the prior written consent of the AESO, acting reasonably, assign this Agreement or any of its rights or obligations arising hereunder. Any purported assignment of this Agreement by the Service Provider without the prior written consent of the AESO shall be void. This Agreement shall enure to the benefit of and be binding upon the Parties, their respective successors and permitted assigns.
- 17.7 Waiver. No waiver by any Party of any breach, whether actual or anticipated of any of the terms, conditions, representations or warranties contained herein shall take effect or be binding upon that Party unless the waiver is expressed in writing under the authority of that Party. Any waiver so given shall extend only to the particular breach so waived and shall not limit or affect any rights with respect to any other or future breach.
- 17.8 Reasonableness of Restrictions. The Service Provider acknowledges having carefully read and considered the provisions of this Agreement and acknowledges that the AESO has permitted the Service Provider sufficient time to seek independent legal advice and, having done so or voluntarily electing not to do so, the Service Provider agrees that the restrictions set forth herein are fair and reasonable and are reasonably required for the protection of the interests of the AESO and its business and that of AESO Personnel.
- 17.9 Entire Agreement. This Agreement represents the entire understanding and agreement of the Parties with respect to the subject matter hereof and supersedes all prior communications, agreements and understanding relating to the subject matter hereof.
- 17.10 Further Assurances. Each Party will, from time to time, without further consideration, do such further acts and deliver all such further assurances, deeds and documents as shall be reasonably required in order to fully perform and carry out the terms of this Agreement.
- 17.11 Counterparts. The Parties may execute this Agreement by facsimile or other electronic means and in separate counterparts, each of which when so executed and delivered shall be an original, and all such counterparts taken together shall constitute one instrument.



[Intentionally left blank – signature page to follow]



IN WITNESS WHEREOF, the Parties acknowledge that they have read this Agreement, understand it, and agree to be bound by it and have caused this Agreement to be executed by their duly authorized representatives effective as of the Effective Date. The Service Provider acknowledges having received a fully executed copy of this Agreement.

**INDEPENDENT SYSTEM OPERATOR,**  
operating as the **AESO**

**[SERVICE PROVIDER LEGAL NAME]**

Per:

Per:

Name:

Name:

Title:

Title:

Date:

Date:

\_\_\_\_\_

\_\_\_\_\_

Per:

Per:

Name:

Name:

Title:

Title:

Date:

Date:

\_\_\_\_\_

\_\_\_\_\_

**THIS IS SCHEDULE “A” TO THE IMPORT FAST FREQUENCY RESPONSE AGREEMENT DATED THIS [•] DAY OF [•], 2021 BETWEEN [•] AND THE INDEPENDENT SYSTEM OPERATOR, OPERATING AS THE AESO**

---

**SCHEDULE “A” – FFR FACILITY INFORMATION**

FFR Facility Information	
<b>Facility name</b>	[insert]
<b>AESO Asset ID</b>	[insert]
<b>Market Participant name</b>	[insert]
<b>Owner and operator</b>	[insert – specify the owner and operator of the facility separately, if different]
<b>Physical address</b>	[insert]
<b>GPS location (coordinates)</b>	[insert]
<b>Connection Point</b>	[insert – specify current or planned connection point to the System, or the City of Medicine Hat electrical system as applicable, with identifier such as line number]
<b>Connection to transmission or distribution</b>	[insert – specify connection to the System as either to transmission or distribution]
<b>Substation identifier (number, name)</b>	[insert]
<b>Source Asset Configuration</b>	[insert – standalone, hybrid for co-location of multiple Generating Units and technology types etc. of the Source Asset, as applicable]
<b>New Technology type(s)</b>	[Insert the type of New Technology providing FFR – e.g., Energy Storage – Battery Energy Storage System; or generation e.g., Generation – Natural Gas-fired, simple cycle, or other as applicable]
<b>New Technology information</b>	[insert – information regarding the New Technology providing FFR – including make, model, type and relevant characteristics (such as in the case of Energy Storage, lithium ion, flow battery, AC-coupled vs. DC-coupled etc., or specifics of each generating unit)]
<b>Source Asset real power (in MW) and as applicable, energy capacity (in MWh)</b>	[insert – the total (overall) capacity in MW and as applicable in MWh (based on rated capacity) present at the facility (of which all or a portion of this volume is proposed to provide

	FFR)]
<b>New Technology maximum capability (in MW)</b>	[insert – the maximum capability (in MW) of the New Technology component of the Source Asset that forms the FFR Facility]
<b>Source Asset maximum capability (in MW), as applicable</b>	[insert – the maximum capability (in MW) of the Source Asset, including that each separate Generating Unit (as applicable) forming the FFR Facility]
<b>Proposed volume able to be provided for FFR from the FFR Facility (in MW)</b>	[insert – the volume in MW proposed to provide FFR at the facility, which may be all or a portion of the total capacity at the facility and which is in accordance with the FFR Requirements]



**THIS IS SCHEDULE "B" TO THE IMPORT FAST FREQUENCY RESPONSE AGREEMENT DATED THIS [•] DAY OF [•], 2021 BETWEEN [•] AND THE INDEPENDENT SYSTEM OPERATOR, OPERATING AS THE AESO**

---

**SCHEDULE "B" – FFR ELIGIBILITY AND REQUIREMENTS**

This document outlines the eligibility criteria and requirements that a Service Provider needs to meet in order to provide FFR.

**Definitions**

Capitalized terms not defined in this Schedule "B" or elsewhere in this Agreement shall have the meaning ascribed to them in the ISO Glossary.

**1 Eligibility to Provide FFR**

- 1.1 The FFR Facility must be located within the Alberta Balancing Authority Area and be connected to the System.
- 1.2 The FFR Facility must be able to provide a minimum of five point zero (5.0) MW of FFR.
- 1.3 The AESO must be able to evaluate the maximum amount of capacity offered for FFR in any one geographical location or by any one or more FFR Facility and determine if the Response of this amount of energy capacity causes an adverse impact on System reliability in the area of the Service Provider.
- 1.4 FFR Facilities that are part of the UFLS program are eligible to provide FFR except for the time-delayed blocks D1, D2 and D3. The Service Provider needs to inform the AESO whether the FFR Facility Source Asset is connected to a UFLS relay and if so, what the UFLS relay setting values are.

**2 Communication Requirements**

- 2.1 The Service Provider must be able to receive and respond to SCADA signals received from the System Controller from both the AESO's primary system control center and the AESO's backup control center via the Energy Management System ("EMS") as the primary means of communication, including for the purpose of Arming/Disarming the FFR Facility, receiving and responding to the SCADA Response Signal, and for capacity restoration following a Response. The Service Provider must install and maintain reliable telemetry signals to the System Controller with the minimum requirements in accordance with this Agreement and ISO Rule 502.8 and applicable sections of Appendix 5, which may be updated from time to time. For greater clarity, analog and status points shall have a latency of fifteen (15) seconds and mean time to repair ninety-eight percent (98%) within forty-eight (48) hours. The AESO will use two (2) second exception and fifteen (15) second integrity data polling. The Service Provider must GPS time-synchronize the SCADA that is provided by the Service Provider to the AESO, with time stamped accuracy of one (1) millisecond.
- 2.2 The requirement to stay equal to or above the Lower Tolerance Limit is inclusive of any permissible SCADA accuracy, resolution or dead band tolerance as stated Table 1 below and which supersedes the specific SCADA accuracy, resolution, and dead band tolerance requirements in ISO Rule 502.8. For greater clarity, the Service Provider shall use exception-based reporting and acceptable dead bands without time delays, filtering, or averaging.

**Table 1  
 Accuracy, Resolution and Dead Band Requirements**

Measurement Type	Accuracy	Resolution	Dead Band
All analog measurements	+/- 2% of full scale	0.1	0.1

2.3 The following analog SCADA data shall be provided:

- (a) From the Service Provider to the AESO:
  - (i) the Actual Volume in MW, a calculated quantity;
  - (ii) for a Source Asset comprised of or including Energy Storage, the State of Charge in MWh, a calculated quantity;
  - (iii) for a Source Asset comprised of or including Energy Storage, the State of Charge as a percentage, a calculated quantity;
  - (iv) the real power in MW, an entered quantity;
  - (v) the Available Capability in MW, an entered quantity;
  - (vi) the Offered Volume in MW, an entered quantity; and
  - (vii) the Armed Volume in MW, an entered quantity;
- (b) From the AESO to the Service Provider:
  - (i) the Dispatched Volume in MW, an entered quantity.

2.4 The following status SCADA data shall be provided:

- (a) From the Service Provider to the AESO:
  - (i) a digital signal indicating Armed or Disarmed status. This is a contact that is either open or closed, where open means “Disarmed” and closed means “Armed”;
  - (ii) SCADA Response Signal status confirmation; and
  - (iii) status of each FFR Facility isolation device, including each breaker, disconnect switch, circuit switches, and motor operated air brake switch (and any other device(s) that can remotely control the connection to of the Source Asset to the System).
- (b) From the AESO to the Service Provider:
  - (i) An Arm or Disarm Dispatch digital signal; and
  - (ii) SCADA Response Signal.

The SCADA Response Signal will be a two (2) second momentary pulse signal from the AESO and the SCADA Response Signal response will be a thirty (30) second momentary pulse returned to the AESO by the Service Provider.

2.5 The Service Provider must be able to receive and respond to voice communication from the System Controller as backup communication. Voice communication for normal telephone service shall be in accordance with Table 1, Column A, Market Participant Subcategory, Section 2 of ISO Rule 502.4.

**3 Operational Requirements**

3.1 The Service Provider must be able to Arm and Disarm the FFR Facility.

3.2 The Service Provider may not Arm the FFR Facility without receiving a Dispatch. Once the FFR Facility has been Armed, the Service Provider may not Disarm the FFR Facility without receiving a Dispatch or verbal instruction to that effect from the System Controller.

3.3 The Service Provider must Arm or Disarm within fifteen (15) minutes in response to a SCADA Dispatch. The Dispatch may be verbal under emergency conditions or if the telemetry (SCADA system) has failed.

3.4 Once Armed, the Actual Volume (that could provide the Response) must remain equal to or above the Lower Tolerance Limit at all points in time and for the duration of the Scheduling Hour.

3.5 If the Service Provider desires to change the Offered Volume, the change will be Dispatched by the System Controller as soon as reasonably possible and no later than the end of the next Scheduling Hour. The Service Provider shall not change to the new Offered Volume unless Dispatched.

3.6 A Service Provider must have their Offered Volume for the next Scheduling Hour received by the AESO no later than: (i) twenty three (23) minutes prior to the start of the next hour for those amounts received prior to January 1, 2022; and (ii) twenty five (25) minutes prior to the start of the next hour for those amounts received on or after January 1, 2022. At that time the Offered Volume in place becomes a commitment for the next Scheduling Hour.

3.7 The Service Provider must ensure that their SCADA point for the Actual Volume is current and accurate at any point in time. For clarity, there shall be no averaging of the Actual Volume.

3.8 The FFR Facility must be able to continue to provide the Response continuously for up to sixty (60) minutes following a Response event.

3.9 After a Response event, the Service Provider can stop providing the Response only when directed by the System Controller, or after a minimum of sixty (60) minutes have elapsed from the Response event.

3.10 The Service Provider must: (i) provide the AESO with any information related to the provision of FFR that the AESO requires in order to properly administer the Services and shall do so in real time and in the manner designated by the AESO; (ii) Arm and Disarm in accordance with any Dispatches received from the System Controller; and (iii) comply with any written instructions provided by the AESO from time to time related to FFR and the Pilot Program.

3.11 When Armed, the Service provider must provide the Response within ten (10) minutes of the SCADA Response Signal being sent from the System Controller, meaning the Response of at least ninety five percent (95%) of the Armed Volume from the FFR Facility that is configured under the FFR scheme. Section 3 of Attachment 1 for further information regarding this requirement.

**4 Technical Requirements – Under Frequency Relay Scheme and Data Measurement**

- 4.1 When Armed, the Service Provider must provide the Response within zero point two (0.2) seconds (12 cycles) of the frequency reaching fifty nine point five (59.5) Hz (+/- 0.02 Hz), meaning the Response of at least ninety five percent (95%) of the Armed Volume from the FFR Facility that is connected to the System at the terminal to the FFR Facility. For a Source Asset that includes Energy Storage, the Response is measured at the alternating current (AC) terminal(s) closest to the inverter or aggregated inverters. The zero point two (0.2) seconds Response timing requirement is the sum of the frequency measurement time plus any time required to Respond with the Armed Volume. See Section 2.1 of Attachment 1 for further information regarding this requirement.
  
- 4.2 The under frequency relay or a control scheme shall be developed using digital under frequency relay or control system measuring frequency at the FFR Facility. The FFR Facility must be directly connected to such under frequency relay or control system.
  
- 4.3 The Service Provider must be capable of recording the frequency, timing, and real power (in MW) for the Response event that was triggered by the under frequency relay FFR scheme and recorded into a data file as an event record of the Response ("**Response Event Record**"). The Response Event Record must consist of the following:
  - (a) the measurement point of the Response Event Record shall be at the connection point of the FFR Facility to the System;
  - (b) for a FFR Facility that has a common point of connection involving more than one generating Source Asset, the Response Event Record must also be measured at the terminals of the FFR Facility generating Source Asset, and if the FFR Facility includes Energy Storage, the Response Event Record must also be measured at the alternating current (AC) terminal closest to the Energy Storage inverter or aggregated inverters;
  - (c) the pre-Response event and post-Response event recording and clearly demonstrate the Service Provider's performance;
  - (d) the Response Event Record must show the Actual Volume for sixty (60) seconds prior to the Response event, during the Response event and for sixty (60) seconds after the Response event with the rate of at least thirty (30) frames per second; and
  - (e) data measurement including the following: (i) the frequency observed by the relay or control system at the FFR Facility; (ii) the real power (MW) of the FFR Facility (either the total MW volume or the volume providing FFR) both prior to the under frequency event and following the under frequency event for sixty (60) minutes; and (iii) a demonstration that the Response was provided in twelve (12) cycles (zero point two (0.2) seconds) or less, once a frequency of fifty nine point five (59.5) Hz is detected by the under frequency relay or control system.

The Service Provider must be capable of providing the Response Event Record electronically in a comma-separated values ("**csv**") file format or other similar data format as specified by the AESO.

- 4.4 All data forming the Response Event Record, and any supporting information, shall be provided to the AESO within five (5) Business Days of the Response event.
  
- 4.5 The Response Record and any supporting information or records shall be retained by the Service Provider for a minimum of two (2) years following the expiry of the Agreement.

## 5 **Monitoring.**

- 5.1 The AESO will monitor the response of the FFR Facility to Response events through the

normal telemetry (SCADA) system. However, because the SCADA system does not provide sufficiently detailed information for any given event, the AESO may request the Service Provider to provide a copy of the electronic Response Event Record referred to in Section 4.3 of the FFR Requirements following every Response event.

6 **Testing**

6.1 No later than the Long Stop Date, the Service Provider shall undertake a test of the FFR Facility (the “**Capability Test**”) in accordance with a test plan that has been approved by the AESO. The Capability Test must prove the ability of the FFR Facility to provide FFR based, at a minimum, on the following principles:

- (a) frequency injection tests using a number of offline frequency injection profiles with different rates of change of frequency;
- (b) monitoring control signals which respond to the offline frequency injection profiles;
- (c) monitoring the real power output of the FFR Facility at the terminal point and point of connection to the System in accordance with Section 4.3(a) and (b) of the FFR Requirements;
- (d) all data in accordance with Section 4.3(c), (d), and (e) of the FFR Requirements;
- (e) assessment of the time delay in providing the Response from the FFR Facility, including: (i) the time it takes for the relay or control system to detect a frequency deviation; (ii) the time for instructing a real power change; and (iii) the time for the FFR Facility to demonstrate and deliver the Response (i.e. the necessary change in real power (MW) output);
- (f) assessment of the sustainability and repeatability of the Response with respect to operating conditions of the FFR Facility, which shall also assess the ability of the FFR Facility to meet the FFR Requirements over time instead of any specific duration or operating condition; and
- (g) assessment of the accuracy and stability of the FFR Facility to provide uniform delivery of the Response.

Simulations or simulated tests of the FFR Facility’s Response are not acceptable. The Service Provider may schedule the Capability Test on such date and time prior to the Long Stop Date in accordance with the ISO Rules. If the FFR Facility fails the Capability Test, the Service Provider may repeat the Capability Test prior to the Long Stop Date.

6.2 No later than the Long Stop Date, the Service Provider shall provide the AESO with:

- (a) a final report certified by a Professional Engineer registered with the Association of Professional Engineers, and Geoscientists of Alberta of the Capability Test confirming that: (i) the FFR Facility is able to provide FFR and will Respond within zero point two (0.2) seconds (12 cycles) of the System frequency reaching fifty nine point five (59.5) Hz (+/- 0.02 Hz); and (ii) the data measurement, collection, and retention abilities of the FFR Facility meet the requirements described in Section 4 of the FFR Requirements (the “**Certified Report**”); and
- (b) evidence, in the Prescribed Form, demonstrating that the Service Provider meets the requirements set out in Section 2 of the FFR Requirements to the satisfaction of the AESO (the “**Communication Confirmation**”).



The Service Provider shall repeat the Capability Test and provide the AESO with a new Certified Report and Communication Confirmation any time there is a material change to the FFR Facility. Notwithstanding anything to the contrary, at the AESO's sole discretion, such repeat Capability Test may be real or simulated.

- 6.3 Upon the AESO's request, the Service Provider shall schedule a test with the AESO for verification that the SCADA Response Signal being sent from the AESO is received and that the proper response sent from the Service Provider is received by the AESO.
- 6.4 Any time there has been a failure to comply with any of the FFR Requirements, the AESO may require the performance of a test after corrective action has been taken in order to confirm the capability of the Service Provider and the FFR Facility to provide FFR, at the Service Provider's sole cost.
- 6.5 During the Service Term and upon the AESO's request, the Service provider shall schedule one (1) additional Capability Test with the AESO. This additional Capability Test shall be scheduled at such date and time as mutually agreed upon by the Parties, acting reasonably.
- 6.6 For the avoidance of doubt, the Service Provider shall bear the risk of, and the AESO shall have no liability to the Service Provider in respect of, loss and damage to the FFR Facility caused during or as a result of any Capability Test or any other test required pursuant to this Agreement.

ATTACHMENT "1"

1. Illustration of FFR SCADA communications for Arming and Offered Volumes

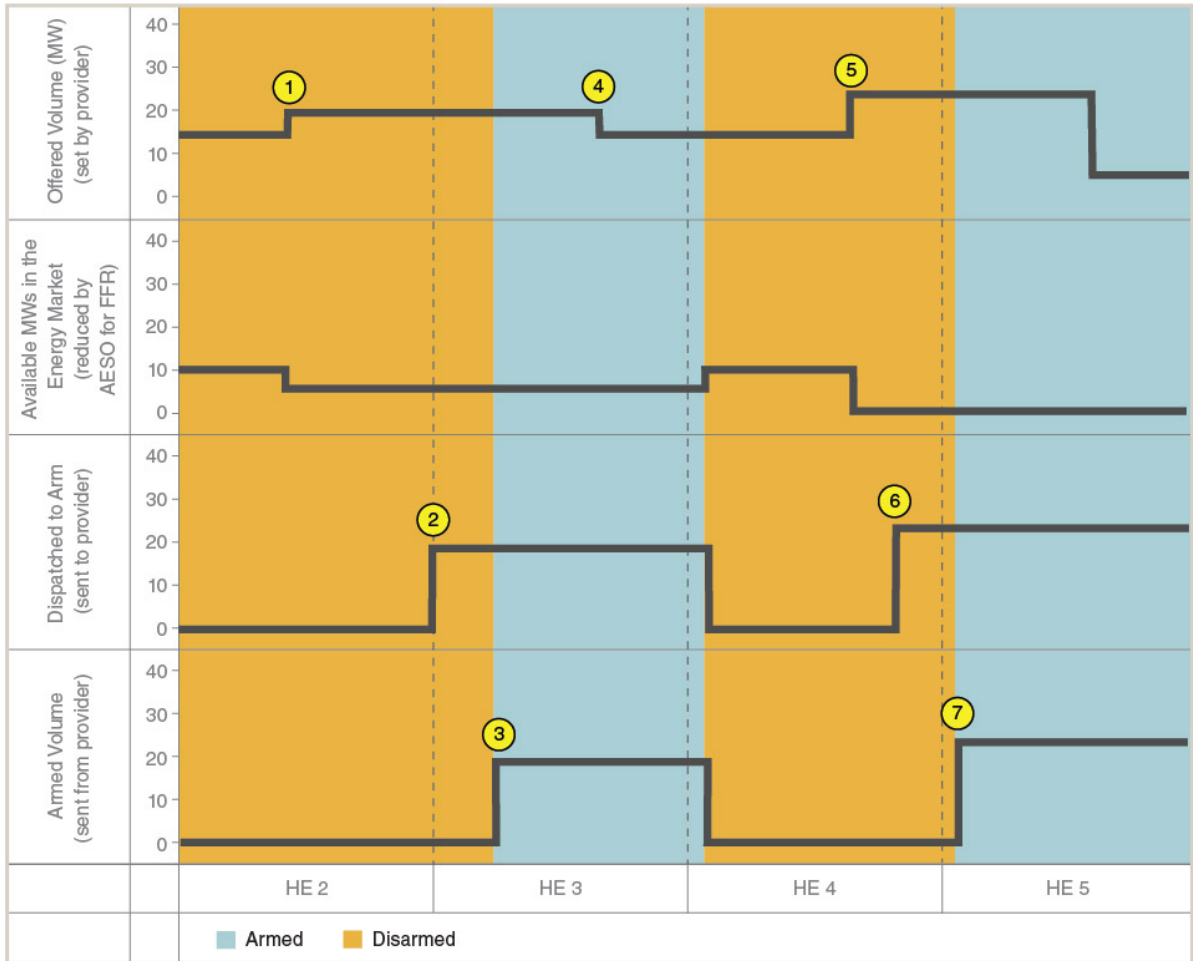


Figure 1 – Illustration is an example of FFR SCADA communication for Arming and offers (occurring after January 1, 2022)

A generating Source Asset with New Technology is a Service Provider of FFR and has an Available Capability of 25 MW. The illustration shows the Service Provider offering for FFR and Arms based on an AESO Dispatch. The generating Source Asset available MW(s) in the energy market will be reduced by the AESO accordingly due to FFR participation, specifically based on the Offered Volume and as applicable, any obligations for Arming. The volume of available MW(s) in the energy market with reduction by the AESO for FFR participation is shown in Figure 1 above.

The highlighted numbered events above correspond to the following actions:

- 1.1 At 1:30, the Service Provider changes their offer to 20 MW which at 1:35 becomes the Offered Volume for the next Scheduling Hour. Confirmation of the FFR Offered Volume is provided via SCADA from the AESO to the Service Provider. The Offered Volume of 20 MW results in a reduction of the Service Provider’s available MW in the energy market by 20 MW.
- 1.2 At 2:00, the System Controller determines that 20 MW of FFR is required from the Service Provider. The Dispatched Volume is transmitted by SCADA to the Service Provider, indicating that the System Controller requires the 20 MW of offered FFR to be Armed. The Service



Provider must comply with the Dispatch within 15 minutes of the System Controller sending the Dispatch via SCADA.

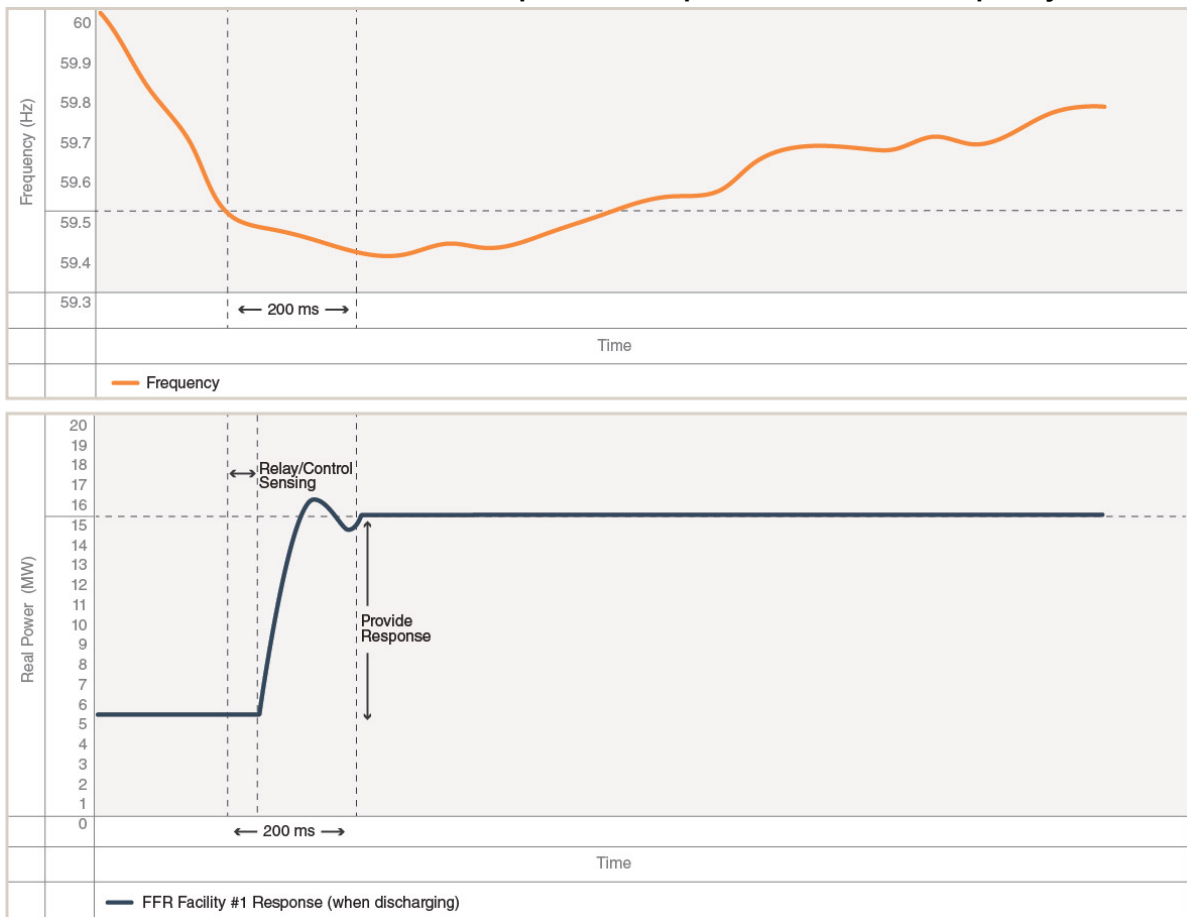
- 1.3 Prior to 2:15, the Service Provider Arms the FFR under frequency relay and/or control system ensuring that the Armed Volume reflects the Dispatched Volume. The state of the FFR scheme (Armed or not Armed) and a confirmation of the 20 MW Armed Volume is sent back to the System Controller, via SCADA, indicating the FFR Facility is Armed for 20 MW, as Dispatched.
- 1.4 At 2:25, the Service Provider determines they would like to provide only 15 MW of FFR for the next Scheduling Hour and changes their submitted offer accordingly. At 2:35, this will be reflected as the Service Provider's Offered Volume for the *next* Scheduling Hour. However, because the Service Provider was already Armed for 20 MW, they are required to provide the 20 MW until the end of the next Scheduling Hour. At 3:05, the System Controller determines that Arming from the Service Provider is not required and sends the Service Provider a Disarm signal. Then at 3:33, the Service Provider submits a new offer of 25 MW. The change is transmitted via SCADA to the System Controller indicating that the Service Provider is available to provide 25 MW of FFR for the next Scheduling Hour.
- 1.5 At this point the Service Provider is not Armed and does not have any volume obligations. At 3:35, the Service Provider's submitted offer of 25 MW becomes the Offered Volume for the next Scheduling Hour. Confirmation of the FFR Offered Volume is sent via SCADA from the AESO to the Service Provider. At this point, the Service Provider is not Armed and does not have any volume obligations. The offer of 25 MW results in a reduction of the Service Provider's available MW(s) in the energy market by 25 MWs.
- 1.6 At 3:50, the System Controller determines that 25 MW of FFR is required from the Service Provider. The Dispatched Volume is transmitted by SCADA to the Service Provider, indicating that the System Controller requires the 25 MW of offered FFR to be Armed.
- 1.7 Prior to 4:05, the Service Provider Arms the FFR under frequency relay and/or control system ensuring that the Armed Volume reflects the Dispatched Volume. The state of the FFR scheme and a confirmation of the 25 MW Armed Volume is sent back to the System Controller, via SCADA, indicating the FFR Facility is Armed for 25 MW, as Dispatched.



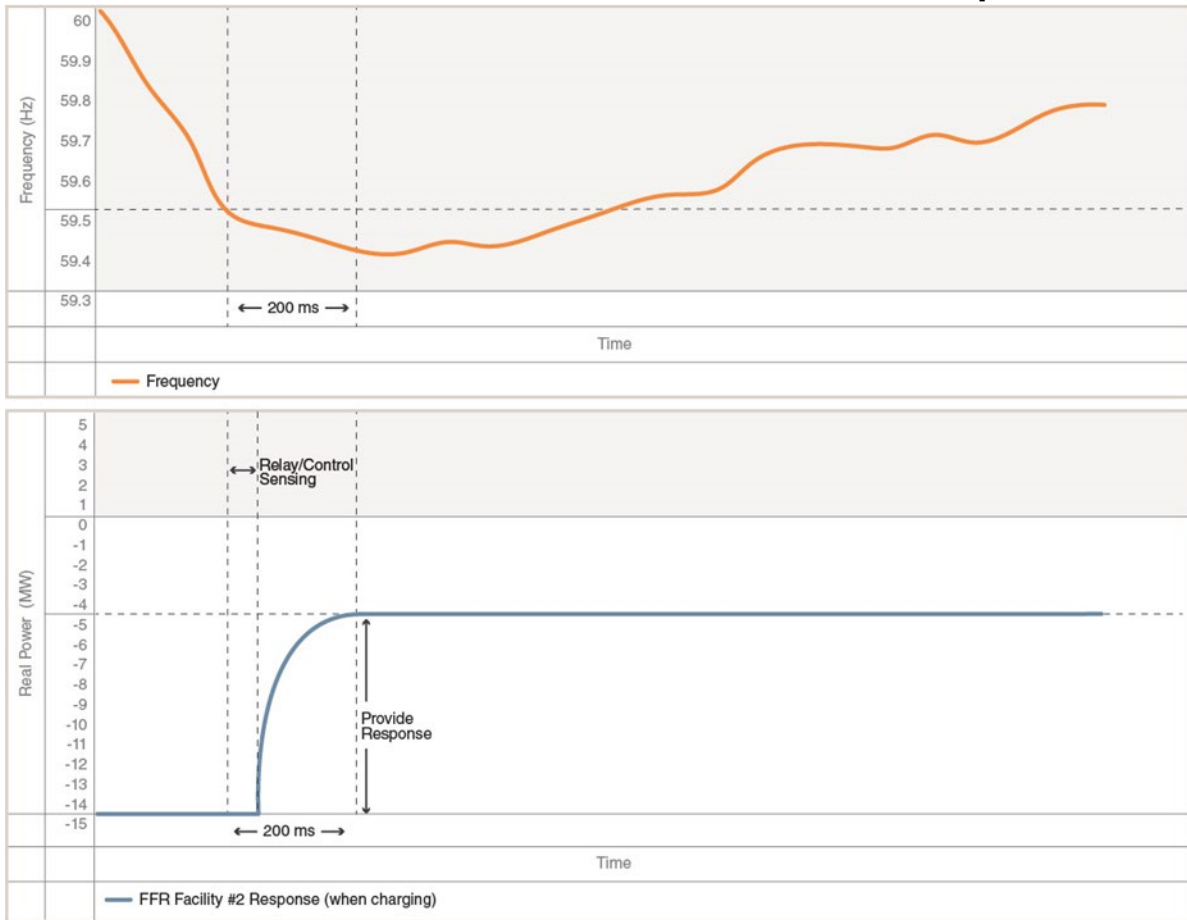
**2. Guide to Meeting the FFR Under Frequency Response and SCADA Response Signal Requirement**

2.1 When Armed, the Service Provider must provide the Response within zero point two (0.2) seconds (12 cycles) of the frequency reaching fifty-nine point five (59.5) Hz (+/- 0.02 Hz), meaning an increase in real power output in MW, either as a reduction in real power consumption or an increase in real power production, by an amount that is at least ninety five percent (95%) of the Armed Volume from the FFR Facility that is configured under the FFR scheme. The zero point two (0.2) seconds Response timing requirement is the sum of the frequency measurement time plus any time required to Respond. This can be achieved by employing an under frequency relay and/or control system set to detect a frequency of fifty-nine point five (59.5) Hz such that the total time necessary for detection, measurement and as well as Response from the FFR Facility in zero point two (0.2) seconds or less.

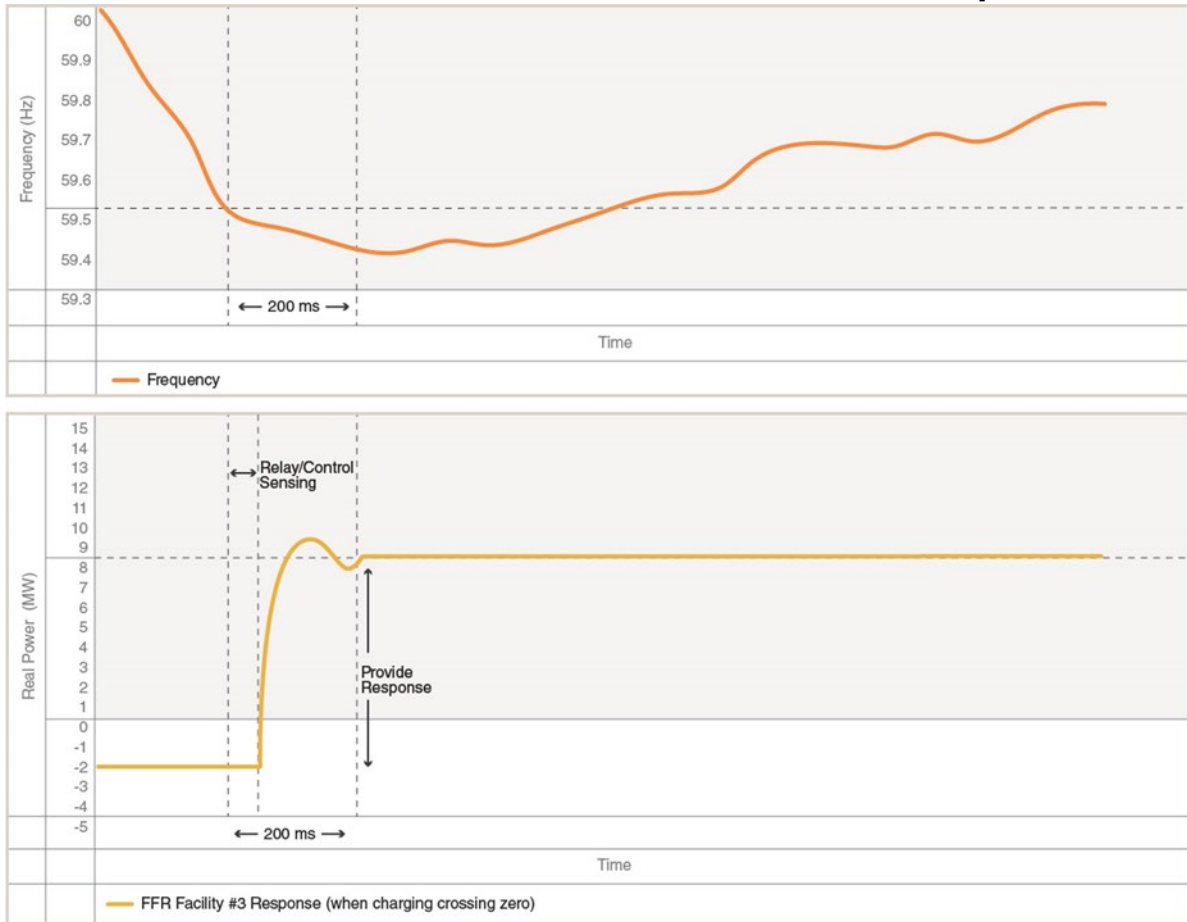
**Illustrations of Three Different Examples of a Response to an Under Frequency Event**



**Figure 2.1 – illustration of FFR Facility #1 increasing its real power production to provide a 10 MW Response based on an Armed Volume of 10 MW within zero point two (0.2) seconds after the System frequency reaches fifty-nine point five (59.5) Hz.**



**Figure 2.2 – illustration of FFR Facility #2 reducing its amount of real power consumption (resulting in an increase in real power) to provide a 10 MW Response based on an Armed Volume of 10 MW within zero point two (0.2) seconds after the System frequency reaches fifty-nine point five (59.5) Hz.**

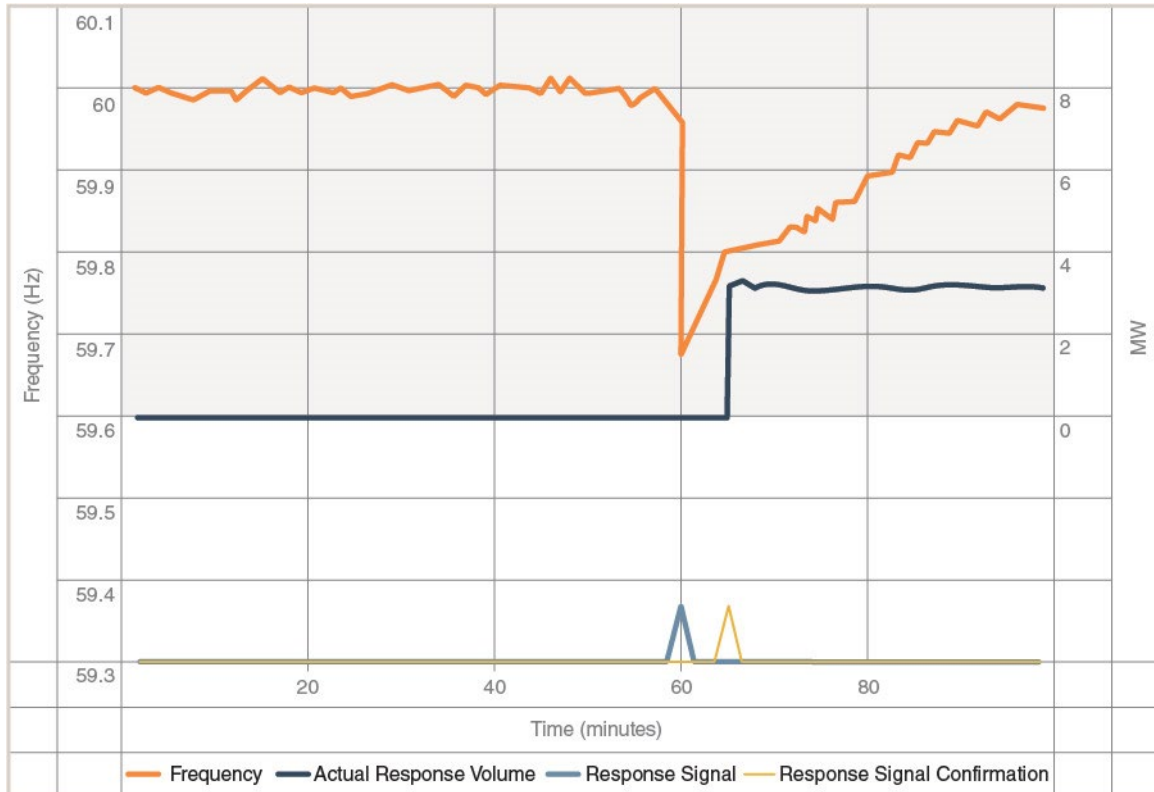


**Figure 2.3 – Illustration of FFR Facility #3 reducing its amount of real power consumption and ramping up its real power production (i.e., injection) to provide a 10 MW Response based on an Armed Volume of 10 MW within zero point two (0.2) seconds after the System frequency reaches fifty-nine point five (59.5) Hz.**

### 3. Guide to the SCADA Response Signal Requirement

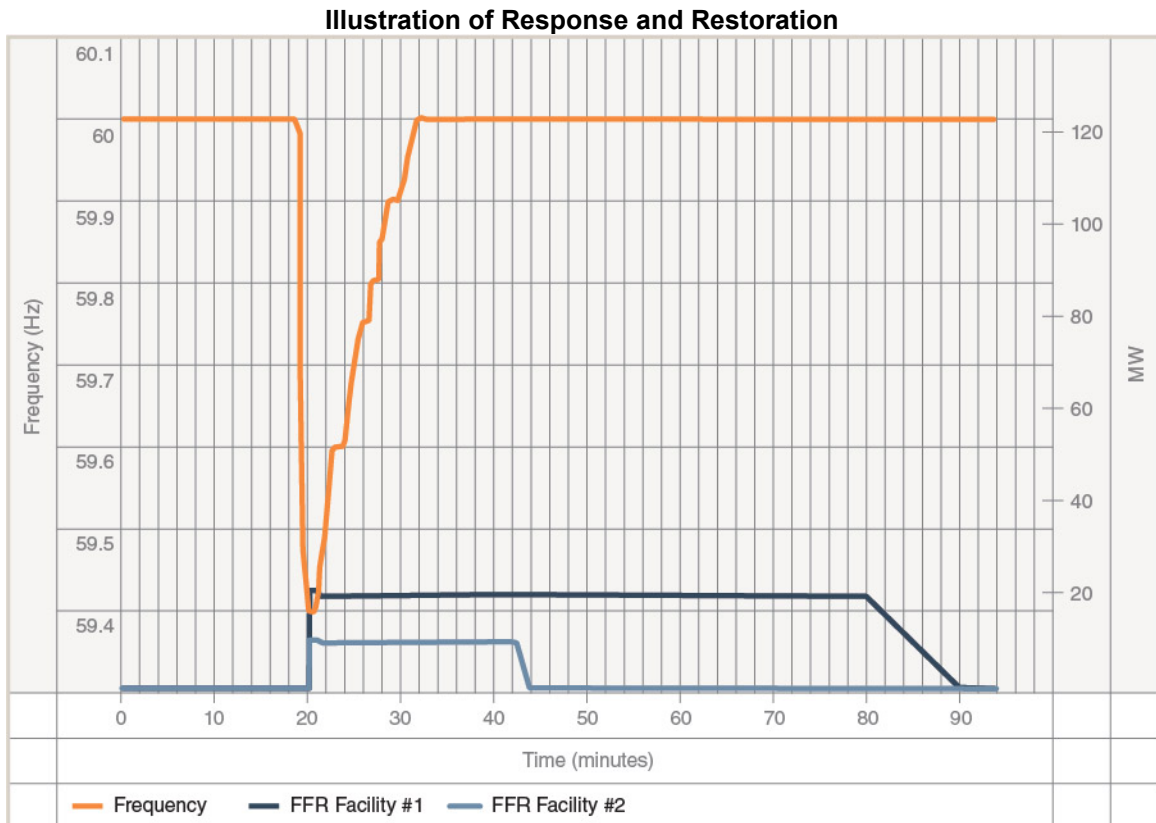
3.1 A SCADA Response Signal may be sent from the AESO. When Armed, the Service Provider must provide the Response within 10 minutes of the SCADA Response Signal being sent from the System Controller, providing a Response of (at least ninety five percent (95%) of) the Armed Volume from the FFR Facility that is configured under the FFR scheme.

**Illustration of SCADA Response Signal**



**Figure 3 – Shows an FFR facility increasing its real power production within 10 minutes of the AESO SCADA Response Signal being sent to the Service Provider. The Service Provider is required to send a SCADA Response Signal status confirmation to the AESO as the receipt of the SCADA Response Signal. The amount of Actual Response Volume is approximately 3 MW as indicated by the right-hand axis.**

#### 4. FFR Arming, Response and Restoration Sequence



**Figure 4 – Illustration of an example of two FFR Facilities each being Armed and providing a Response, and being restored as follows (real power in MW shown in the right hand axis)**

Timeline for a fifty nine point five (59.5) Hz under frequency response on the System:

- 4.1 At time  $t = 0$  FFR, Facility #1 is Armed for 20 MW and Facility #2 is Armed for 10 MW;
- 4.2 At time  $t = 19$  minutes, a System event takes place and the frequency drops to fifty nine point four (59.4) Hz and triggers the FFR Facility #1 Response of 20 MW and FFR Facility #2 Response of 10 MW;
- 4.3 At time  $t = 32$  minutes, the System frequency has restored to normal conditions at sixty-point zero (60.0) Hz;
- 4.4 At time  $t = 35$  minutes, the System Controller sends a Disarm signal via SCADA to FFR Facility #2 and to allows it to stop providing a Response. In the event of a Response, a Disarm signal to a FFR Facility is a trigger to then remove the reduction to the available MWs in the energy market applicable to the FFR Facility. However, the System Controller does not send an updated SCADA signal for FFR Facility #1 so it remains at the current Response level; and
- 4.5 At time  $t = 80$  minutes, FFR Facility #1 receives a Disarm signal from the System Controller after 60 minutes following the Response to the under frequency event. In the event of a Response, a Disarm signal to a FFR Facility is a trigger to then remove the reduction to the available MWs in the energy market applicable to the FFR Facility.

## 5. Guide to Calculating Actual Volume for Energy Storage Facilities

The Actual Volume for Source Assets solely comprised of Energy Storage, is calculated differently based on the real power (in MW), and the following are calculation examples:

### 5.1 Example when consuming real power:

- A 10 MW, 20 MWh Energy Storage Source Asset with an Available Capability of 10 MW, is consuming real power of -3 MW (e.g., charging), and has a State of Charge of 1 MWh. The Actual Volume is 1 MWh State of Charge divided by 1 hour, plus the absolute value of the real power of |-3 MW| and minus any operating reserve market committed capacity, which equals 4 MW as outlined below.

Available Capability (MW)	Absolute value of Real Power (MW), instantaneous	State of Charge (MWh), divided by one (1) hour	Operating Reserve Market committed capacity in (MW)	Actual Volume
10 MW	-3 MW (consuming real power, e.g., charging),  -3 MW  = 3 MW	1 MWh / 1 hour = 1 MW	0	Equals (1 MW) plus (3 MW), minus 0 MW = 4 MW

### 5.2 Examples when injecting real power:

- A 20 MW, 20 MWh Energy Storage Source Asset with an Available Capability of 20 MW, an instantaneous real power of +5 MW (discharging) and 10 MWh State of Charge, the available capability is the lesser of the State of Charge (10MWh) divided by 1 hour which equals 10 MW, and the Available Capability of 20 MW minus the Real Power of 5 MW which equals 15 MW, minus any operating reserve market committed capacity, therefore the Actual Volume is 10 MW.

Available Capability (MW)	Absolute value of Real Power (MW), instantaneous	State of Charge (MWh), divided by one (1) hour	Operating Reserve Market committed capacity in (MW)	Actual Volume
20 MW	+5 MW (injecting real power, e.g., discharging),  +5 MW  = 5 MW	10 MWh / 1 hour = 10 MW	0	The lesser of (10 MW) and (20 MW – 5 MW = 10 MW), and minus 0 MW, therefore Actual Volume = 10 MW

- The same Energy Storage Source Asset in the previous example that is 20 MW, 20 MWh Energy Storage Source Asset in the same state, but with an operating reserve market committed capacity of 5 MW (i.e., if the same Energy Storage facility sold a portion of its capacity in the operating reserves market), then results in an Actual Volume is 5 MW.

Available Capability (MW)	Absolute value of Real Power (MW), instantaneous	State of Charge (MWh), divided by one (1) hour	Operating Reserve Market committed capacity in (MW)	Actual Volume
20 MW	+5 MW (injecting real power, e.g., discharging),   +5 MW   = 5 MW	10 MWh / 1 hour = 10 MW	5	The lesser of (10 MW) and (20 MW – 5 MW = 10 MW), and minus 5 MW operating reserve committed capacity, therefore Actual Volume = 5 MW

**5.3 Example when real power is zero:**

- A 10 MW, 5 MWh Energy Storage Source Asset with an Available Capability of 10 MW, a State of Charge of 2 MWh, and an instantaneous real power output of 0 MWh, the State of Charge of 2 MWh divided by 1 hour, equals 2 MW, minus any operating reserve market committed capacity, therefore the Actual Volume is 2 MW.

Available Capability (MW)	Absolute value of Real Power (MW), instantaneous	State of Charge (MWh), divided by one (1) hour	Operating Reserve Market committed capacity in (MW)	Actual Volume
10 MW	0 MW,  0MW  = 0 MW	2 MWh / 1 hour = 2 MW	0	2 MW, minus 0 MW, therefore Actual Volume = 2 MW